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FIVE PRESIDENTS

Josiah Quincy, 1829-1845; Edward Everett, 1846-1849; Jared Sparks, 1849-1853; James Walker, 1853-1860; Cornelius C. Felton, 1860-1862

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BY

JOHN HAYS GARDINER

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PREFACE

In view of the circumstances surrounding the writing and publication of this volume a brief word of preface is fitting.

John Hays Gardiner was born at Gardiner, Maine, April 6, 1863, the son of Colonel John William Tudor Gardiner of the Class of 1836 and Ann Elizabeth (Hays) Gardiner, and the grandson of Robert Hallowell Gardiner of the Class of 1801. He was admitted to Harvard from J. P. Hopkinson's private school in July, 1881, and received his A.B. in 1885. The two following years he spent at the Harvard Law School, when health and strength failed him. Five years variously occupied in private tutoring and foreign travel, with frequent periods of complete rest at home, were necessary to restore him to an active life.

In 1892 he began a connection with Harvard University that was to last almost continuously for twenty-one years. From September, 1892, until September, 1900, he was Instructor in English in Harvard College; and from September, 1900, to June, 1910, Assistant Professor of English; then, after a year devoted to writing, he entered the service of the Harvard Alumni Association to assume the editorship of the *Harvard Alumni Bulletin*, a position which he held at the time of his death in Boston on May 14, 1913.

His active interests were not confined to the limits of his assigned tasks. One of the earliest and most persistent advocates of the necessity of better English com-

position, he did a very considerable service to the cause of English teaching, particularly in the schools. Among his other good works for the Department of English he was influential in arranging for several Shakespearian plays, staged in an improvised open-air theatre. He was an ardent worker for the welfare of the Harvard University Library and the Child Memorial Library, and did much to strengthen them in those fields for which his travel and reading had given him a particular liking. He was also actively associated with the Harvard Co-operative Society and with the Harvard Union.

His published writings were on those subjects with which his courses were especially concerned and consisted of three text-books in English Composition and one book on the English Bible from the point of view of English literature.

The spirit which he brought to his work was the spirit of quiet helpfulness. To the cause, the colleague, or the undergraduate that needed aid, he gave generously of his money and of his time. A gentleman of rare instincts and warmth of heart, he is remembered with affection by those who were privileged to have his friendship.

It was a source of great satisfaction to Gardiner that he was able to complete the manuscript of " Harvard " a few days before he died. It was not, however, possible for him to give it the final and careful revision which he had planned. It has seemed unwise for others to attempt the modifications which he himself might have made, and so, except for the verification of certain facts, the manuscript is printed as it was left by him. Apparently the intention was to write of Harvard, its history, its activities, and its customs, from its founding to the end of President Eliot's administration in 1908. In several instances, however, mention is made of hap-

penings of a later date, but not to an extent which gives a complete account of the changes effected by President Lowell in the past six years. For any other hand than Gardiner's to have smoothed out these irregularities would have marred more than it would have helped.

I cannot speak of those to whom he would have wished to express his appreciation of their assistance. That there are many, I am certain; their names, however, I do not know. To none, surely, would he have acknowledged a greater debt of gratitude than to his friend Edgar Huidekoper Wells, whose untiring and loyal support made it possible for him to complete the manuscript.

The suggestions of Mr. W. C. Lane and Professor W. A. Neilson have been exceedingly happy in making this book ready for the press, and to Mr. George B. Ives I am under deep obligations for the wise counsel which he has so abundantly given.

R. P.

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I

THE HISTORY OF THE UNIVERSITY

The Founding. The First Struggle for Liberty. Period of Growth. During the War of Independence. Under the New Republic. Harvard Becomes Unitarian. Intellectual Advance. Conservative Reaction. The End of the Old Era. The University of To-day. The Expansion of Instruction. The Maturing of Undergraduates. Graduate Instruction and Research. The Advance in Professional Study.

On Thursday, September 8, 1636, old style, the General Court of the Colony of Massachusetts Bay assembled under the governorship of Henry Vane. At an adjourned meeting on October 28, the following vote was passed:—

The Court agreed to give 400*l* towards a schoale or colledge, whearof 200*l* to bee paid the next yeare, & 200*l* when the worke is finished, & the next Court to appoint wheare & wt building.[1]

At an adjourned meeting of the General Court on November 15, 1637, "the colledge is ordered to bee at Newetowne." Five days later a committee, including Governor Winthrop, the Deputy Governor, Mr. Dudley, the Treasurer, Mr. Bellingham, and of the clergy, Sheopard, Cotton, and Wilson, with six others, was appointed "to take order for a colledge at Newetowne." The amount of this first appropriation of £400, which it is estimated was equal to a year's income of the colonial government, and the choice of the most important men

[1] *Quinquennial Catalogue*, 1910, p. 5.

of the colony to oversee the establishment of the College, show the high importance attached to the foundation. The next year (1638) the name Newetowne was changed to "Cambrige," in memory of the English town at whose university many of the colonists had been educated.

No actual steps seem to have been taken before this year, however, to open the College. Then, in 1638, the Reverend John Harvard, a young dissenting minister, who had taken his degree at Emmanuel College, Cambridge, in 1631, and in 1637 had emigrated to Massachusetts, died within a year of his arrival, and bequeathed one half of his property and his entire library to the new College. This gift made possible the immediate opening of the College; and ultimately it received from John Harvard's estate over £700, a sum nearly double the original grant by the General Court, and two hundred and sixty volumes. A building was erected and the first class of the College was formed in the same year. In recognition of the bequest, it was ordered by the General Court on the 13th of March, 1638-39, "that the colledge agreed vpon formerly to bee built at Cambridg shal bee called Harvard Colledge."

A general subscription for the benefit of the College followed. The magistrates contributed books to the value of £200 for the library; others gave £20 or £30; and there were many lesser gifts, including, we are told, a number of sheep, a quantity of cotton cloth worth nine shillings, a pewter flagon worth ten shillings, a fruit-dish, a sugar-spoon, a silver-tipped jug, one great salt and one small trencher-salt.[1] The zeal of the founders is shown in this passage from *New England's First Fruits* (1643):—

[1] Josiah Quincy, *History of Harvard University*, vol. i, p. 12.

After God had carried us safe to *New-England,* and wee had builded our houses, provided necessaries for our liveli-hood, rear'd convenient places for Gods worship and setled the Civill Government: One of the next things we longed for, and looked after was to advance *Learning* and perpetuate it to Posterity; dreading to leave an illiterate Ministery to the Churches, when our present Ministers shall lie in the Dust.[1]

For the first two years (1637-39) the " school " was under the superintendence of Nathaniel Eaton, who seems to have left no favorable reputation behind him. He was soon dismissed and the duties were performed by Mr. Samuel Shepard until the arrival in the country of the Reverend Henry Dunster in 1640. He was immediately elected President and entered office August 27.

In the meantime, under the superintendence of Eaton, a building had been erected for the school, probably on the same lot with Eaton's house, the foundation stones of which were discovered on Massachusetts Avenue just to the east of Wadsworth House, during the excavation for the Subway. Eaton, we are told, inclosed about an acre of land with a high paling and set out many apple trees, and the College had a considerable number of scholars. In 1643 *New England's First Fruits* describes the institution as follows:—

The edifice is very fair and comely within and without, having in it a spacious hall, where they daily meet at the Commons, Lectures, Exercises, and a large library with some books to it, the gifts of divers of our friends; their chambers and studies also fitted for and possessed by the students, and all other rooms of office necessary and convenient; and by the side of the College a fair Grammar School for the training up of young scholars and fitting them for academical learning, that still as

[1] *Quinquennial Catalogue,* 1910, p. 7.

they are judged ripe they may be received into the College.

Under President Dunster the College held its first Commencement in 1642, with a graduating class of nine. Its most distinguished member was George Downing, who was knighted in 1660 and became a baronet in 1663, and who was a member of Parliament, and Ambassador to the Netherlands from both Cromwell and Charles the Second. By this time the College had so grown that it was found expedient to give it a more formal government; and on September 8, 1642, the General Court passed an act providing for a Board of Overseers, who should have the general management of the College. The act is as follows:—

Whereas, through the good hand of God upon us, there is a College founded in Cambridge, in the county of Middlesex, called Harvard College, for the encouragement whereof this Court has given the sum of four hundred pounds, and also the revenue of the ferry betwixt Charlestown and Boston, and that the well ordering and managing of the said College is of great concernment,—

It is therefore ordered by this Court and the authority thereof, that the Governor and Deputy-Governor for the time being, and all the magistrates of this jurisdiction, together with the teaching elders of the six next adjoining towns,—viz. Cambridge, Watertown, Charlestown, Boston, Roxbury, and Dorchester,—and the President of the said College for the time being, shall, from time to time, have full power and authority to make and establish all such orders, statutes, and constitutions as they shall see necessary for the instituting, guiding, and furthering of the said College and the several members thereof, from time to time, in piety, morality, and learning; as also to dispose, order, and manage, to the use and behoof of the said College and

the members thereof, all gifts, legacies, bequeaths, revenues, lands, and donations, as either have been, are, or shall be conferred, bestowed, or any ways shall fall or come to the said College.

And whereas it may come to pass that many of the said magistrates and elders may be absent, or otherwise employed in other weighty affairs, when the said College may need their present help and counsel,—it is therefore ordered, that the greater number of magistrates and elders which shall be present, with the President, shall have the power of the whole. *Provided,* that if any constitution, order, or orders, by them made, shall be found hurtful unto the said College, or the members thereof, or to the weal public, then, upon appeal of the party or parties grieved unto the company of Overseers first mentioned, they shall repeal the said order or orders, if they shall see cause, at their next meeting, or stand accountable thereof to the next General Court.[1]

At one of the early meetings of the Board of Overseers (December 27, 1643) a college seal was adopted which contained three open books on a shield, with the word *Veritas.*

The provision for the support of the College seems to have been uncertain. The original grant of £400 from the General Court was apparently never paid over in a lump. The General Court, however, made annual appropriations for the salary of the President. In 1644, for example, "it was ordered that Mr. Dunster should have assigned to him £150 . . . in part of the £400 promised unto him for his uses and belonging to the College." But at this time and for many years afterwards, the President of the College had reason to complain of the irregularity and uncertainty in payment of his salary. In November, 1654, Dunster speaks

[1] *Annual Catalogue,* Preface.

of the President's house as "a place which upon very damageful conditions to myself, out of love for the college, I have builded." It is estimated that until 1673 the grants of the General Court never had come up to £100 a year. The deficiency in the income was made up by assessments on the students.

In 1650 the General Court made another change in the government of the College by granting the charter under which the College lives to-day. It was found inconvenient to get together the magistrates and the ministers of the six scattered churches for the everyday administration of the College; and accordingly, at the instance of President Dunster, the General Court constituted the President, five Fellows, and the Treasurer a Corporation, with power to fill vacancies with the consent of the Board of Overseers, and to hold property for the use of the College, and granted to them the power to "meet and choose such officers and servants for the College, and make such allowances to them, and them also to remove, and after death or removal, to choose such others, and to make from time to time such orders and by-laws, for the better ordering and carrying on the work of the College, as they shall think fit; *provided* the said orders be allowed by the Overseers." Seven years later a slight modification was made in this charter, providing that the consent of the Overseers should not be necessary before any action of the Corporation went into effect. This charter has worked singularly well.

Dunster's presidency lasted till 1654, with great benefit to the College. Then the Puritan intensity of theological belief on all the details of the Christian faith forced him out, for he had openly declared himself a disbeliever in the baptism of infants. The offense

CHARTER OF 1650

was so serious that he was indicted by the Grand Jury, convicted by the Court, and required to give bonds for good behavior. As a result of this prosecution he was compelled to resign the presidency of the College. He made an appeal for a little delay since "the time of the year is unseasonable, being now very near the shortest day in the depth of winter; that he had no place to move to; that his wife was sick, and his youngest child so dangerously ill that they dared not carry him out of doors." On this plea, the General Court allowed him to remain in the President's house until the following March. His services to the College seem to have been of the highest importance. Before his election it was spoken of as a school; he left it definitely a college, though for many years to come it was to be a college somewhat in the sense that Eton is one.

Dunster's successor was the Reverend Charles Chauncy, who was President until 1672. His presidency covered the evil times of the restoration of the Stuarts in England, when the prospects of the Puritan colony were so dark. The College seems to have been in great straits. In 1655 the Corporation and Overseers sent information of the present necessities of the College to the General Court, stating that it had only "a building, library, a few utensils, the press, some land which cannot be sold, £12 per annum to support four Fellows, and £15 per annum for scholarships." In 1669 the buildings were described as "ruinous and almost irreparable; the President was aged, and the number of scholars short of what they had been in former days."[1]

In May, 1669, the town of Portsmouth made a voluntary contribution of £60 a year for seven years ensuing,

[1] Quincy, *ubi sup.*, vol. i, p. 29.

in response to "the loud groans of the sinking College." The example stirred Massachusetts, and an agent was sent to England to solicit aid from the friends of the College. In the course of the following year subscriptions were received for £2600, though some of them had to be collected by process of law.

Chauncy was a good scholar, who had formerly been Professor of Greek and Hebrew at Trinity College, Cambridge. He had some minor peculiarities of theological faith, but none so strictly held that they did not give way under pressure, and he remained President until his death.

In 1672 Leonard Hoar (A.B. 1650), a clergyman and physician, was elected President, the first graduate of the College so to serve. His service was brief and stormy. There were internal intrigues in the Corporation and disturbances among the students, which were said to have been encouraged by Hoar's enemies. In 1673 four Fellows resigned, and refused reëlection during his service, in spite of the efforts of the Overseers to reconcile them. Finally, in March, 1674, Hoar resigned and Urian Oakes (A.B. 1649), one of the Fellows, was chosen to act as President until a regular incumbent should be found. This proved difficult, and he served for five years as acting President. In February, 1679, he was elected President, but died in July of the next year. John Rogers (A.B. 1649) succeeded him for two years, and on his death the Reverend Increase Mather (A.B. 1656) became acting President, and in 1686 Rector. For the next twenty years the College passed through a period of great turmoil.

In the meantime the College had received important gifts. In 1677 Theophilus Gale bequeathed to it his whole estate; and for many years his library constituted

more than half of the whole College library. In 1678 Sir Matthew Holworthy bequeathed £1000 to the College without restriction, the largest gift received in the seventeenth century. The College, however, remained small; down to 1690 the largest graduating class was fourteen. Some light on the age of its students is given by the contemptuous answer of President Mather in 1678 to the proposal that he should remove to Cambridge and give his whole time to the College: "Should I leave preaching to 1500 souls, for I suppose so many ordinarily attend our congregations, only to expound to 40 or 50 children, few of them capable of edification by such exercises, I doubt I should not do well." The number of instructors seems also to have been small. In a manuscript book of laws signed by Presidents Chauncy and Hoar, apparently about the time of the proposed charter of 1672, in a list of the Corporation two members are designated as tutors; and in 1674 the records show that there were three resident instructors. The President also probably gave a portion of his time to instruction.

The life of the College in this early period must have been that of a boarding school. In 1656 the General Court empowered the President and Fellows of Harvard College, or the major part of them, to "punish the misdemeanors of the youths either by fine or whipping in the halls openly as the nature of the offense should require, not exceeding ten shillings or ten stripes for one offense." Their life was strictly ruled. "Everyone shall consider the main end of his life and studies to know God and Jesus Christ which is eternal life." They were expected to "honor as their parents, magistrates, elders, tutors, and aged persons by being silent in their presence . . . and showing all those laudable

expressions of honor and reverence in their presence that are in use, as bowing before them, standing uncovered or the like." "No scholar shall buy, sell, or exchange anything, to the value of sixpence, without the allowance of his parents, guardians, or Tutors." "The scholars shall never use their mother tongue except that in public exercises of oratory, or such like, they be called to make them in English."[1]

Nevertheless, the life was not wholly grim for the boys of fourteen to eighteen who were the students. In 1666 it is recorded that three students were expelled "for the disorder and injurious carriage towards Andrew Belcher in killing and having stolen ropes in hanging Goodman Sell's dog upon the sign post in the night"; and in 1659 the Corporation found it necessary, in view of the "great complaints of the exorbitant practices of some students of this College by their abusive words and actions towards the watch of this town, to allow the head watchman to follow students into the College yard."

In 1692 William and Mary granted a new charter, which worked a revolution in the constitution and the ideals of the Puritan colony, and incidentally brought on a period of revolution and turmoil in the College. Under the new charter, citizenship was made dependent on property, instead of on church membership. The change, which was a vital blow at the power of the theocracy, was based on the view that in practice the world must take precedence of the church in the government of men. By a curious blindness, Increase Mather, who was the chief leader of the ministers' party, was influential in having the new charter framed

[1] Quincy, *ubi sup.*, vol. i, pp. 515, 516, 517.

and accepted. He had been in England as the agent of the colony, and had thus had the principal voice in the nomination of all the officers under the new charter. This temporary triumph blinded him to the fact that the source of power was henceforward shifted from his own order to the laity.[1] His triumph was short-lived, and his discomfiture began when he attempted to make over the government of the College in order to bring it wholly under his own control. He first proposed a new charter with a corporation of ten members, and no provision for a board of overseers or visitors of any kind. This charter failed, for the King refused to give his assent.

This was the beginning of a period of much disorder in the government of the College. Increase Mather and his son Cotton were the leaders in the party that fought bitterly to maintain the power of the ministry, as against the majority of the Corporation, led by John Leverett, William Brattle, and Thomas Brattle, who belonged to the party of progress. The controversies over the College were closely mingled with religious disputes among the churches in Boston. In 1697 Thomas Brattle formed the church which was later known as the Brattle Square Church, with more liberal conditions as to membership than would have been thought tolerable to the first generation of the Puritan Fathers. This church was fought, as a seat of apostasy, by the Mathers and the old party.[2]

In the meantime, the presidency had been in abeyance. After the death of John Rogers, in 1684, Reverend Increase Mather was successively Acting President for a year from June, 1685, and Rector from July, 1686,

[1] Quincy, *ubi sup.*, vol. i., pp. 59, *ff.*
[2] *Ibid.*, pp. 132, 133.

for six years. The Corporation insisted that the President should reside at the College, but Mather wished to hold the presidency and at the same time retain his church in Boston. Since Cambridge could be reached from Boston at this time only by ferry through Charlestown, or else by the long roundabout ride through Roxbury and Brookline, an absentee president, of necessity, could give little attention to the administration of the College, especially when he had the charge of a large city church. Finally, in 1692, Mather made some kind of half-promise to change his residence, and was thereupon elected President. He kept putting off his removal to Cambridge, however, in spite of the insistence of the General Court, which constituted a large part of the Overseers, and for nearly ten years there were constant disputes over the matter. To provide in part for the charge of the College, Charles Morton was made Vice-President in 1697, but died before completing a year of service, and two years later Samuel Willard (A.B. 1659) was chosen to the same office. Finally, in September, 1701, the General Court forced Mather to resign from the presidency, and the College went on until 1707 under the vice-presidency of Willard. When the latter died, John Leverett (A.B. 1680) was elected President, in January, 1707.

In the meantime, Mather and his party had made various efforts to make over the charter, with the purpose of getting rid of the Board of Overseers, and concentrating the power in the hands of the old party. All of these efforts, however, failed, at one stage or another, and finally, in 1707, the General Court passed a resolution declaring the charter of 1650 to be still in

force, and directing the President and Fellows to regulate themselves according to its provisions.

Even now, however, Cotton Mather, who had succeeded his father as the chief leader in the fight for the lost cause of the ministers, aided by Chief Justice Sewall and other members of the Board of Overseers, continued to make trouble for the College. In 1718, they supported a graduate named Pierpont, who attempted, through the courts, to compel the government of the College to grant him the master's degree. The Corporation stood firm, believing that the case involved the independence of the College, and the court supported them. In the same year, Sewall and the other members of the Corporation in the Board of Overseers bitterly attacked the President because he had given up the practice of a daily exposition of the Scriptures to the students.

In 1721, the old party made further trouble when Thomas Hollis of London, the chief benefactor of the College in the eighteenth century, proposed to endow a professorship of divinity. Hollis himself was a Baptist, and a man of an enlightened liberality of thought. The only prescription he made for the professorship was that no one should be rejected on account of being a Baptist, and that the incumbent should make as his only declaration some general and liberal declarations of adherence to Christianity.[1] The Corporation was willing to accept the endowment of the professorship on these liberal terms, and elected the Reverend Edward Wigglesworth to fill the new chair. The Board of Overseers, however, in which there was a strong majority of the old school, was by no means prepared for so liberal an establishment; and they subjected the new professor to a strong and rigid theological test. The corre-

[1] Quincy, *ubi sup.*, vol. i, pp. 531, 538.

spondence shows that Hollis was far in advance of the times, and that the Overseers, though eager to receive the endowment, were far from willing to accept it on the terms on which it was offered.

In 1721 the militant Overseers found still another ground for making trouble. Two of the tutors, Sever and Welsteed, claimed seats in the Corporation on the ground that they were Fellows. Down to this time, the term Fellow had been used indifferently in two senses, and in many cases the same men were Fellows in both senses. On the one hand there were the Fellows of the Corporation, who under the charter had the control and management of the College. On the other hand there were the "Fellows of the House," as they came to be called, who, being Fellows in the English sense of the word, were also tutors. The lax use of the terms had made trouble and left a knotty point of constitutional usage for a starting-point of dissension in this period of revolution. The petition of Sever and Welsteed seems to have been prompted by the desire to oust from the Corporation Colman, Appleton, and Wadsworth, all strong members of the liberal party. After two years of dispute, the Council, standing by Governor Shute and the Corporation, refused to concur with the House of Representatives, which had sided with the Overseers, and the dispute came to an end.

In 1724 John Leverett died. He had carried the College through the time of revolution, and through his efforts and those of his supporters it had been ranged on the side of liberal and tolerant ideas. The struggle had not been without effect, for Yale College was founded in 1701 for the specific purpose of providing comfort and support for the older and narrower doctrines; and the party which held to the stricter doc-

trines of the fathers gave it their ardent support. Cotton Mather even made an effort, though without success, to divert the liberality of Thomas Hollis from Harvard to Yale.

On Leverett's death, the Corporation elected first the Reverend Joseph Sewall and then the Reverend Benjamin Colman as President, but both declined; and in June, 1725, the Reverend Benjamin Wadsworth (A.B. 1690) was elected. The salary of the Presidents was still paid by the General Court and the payments had been irregular. Leverett had been in the greatest straits and had received little comfort from the General Court. On Wadsworth's election it appropriated £1000 to build a house for him. This house, known by his name, is still standing.

Wadsworth's twelve years of service were on the whole times of peace. The only serious disturbance came from the growing strength of the Episcopal Church, and an attempt to have it take part in the government of the College. When King's Chapel was dedicated, there was for the first time in Boston a minister of the Established Church. In 1727, the Reverend Dr. Cutler, who had been rector of Yale College and then had become a convert to Episcopalianism, petitioned that " he might be notified to be present at the meetings of the Overseers "; and the Reverend Mr. Myles, rector of King's Chapel, presented a similar petition. The right to a seat in the Corporation turned on the definition of the term " teaching elder "; and it was successfully pointed out that the term was unknown in the Established Church and could apply only to Puritan churches.

During the thirty years of the presidency of Leverett and Wadsworth the College grew steadily in numbers.

After 1719 no class fell below twenty, and in 1725 the number of graduates rose to forty-five. Little is known of the studies down to this time in the seventeenth century. The requirements for admission were "so much Latin as was sufficient to understand Tully or any like classical author, and to make and speak true Latin in prose and verse, and so much Greek as was included in declining perfectly the paradigms of the Greek nouns and verbs." The students were practiced twice a day in reading the Scriptures, with observations on their language and logic. In the first year, we are told, they studied "logic, physics, etymology, syntax, and practice on the principles of grammar"; in the second year, "ethics, politics, prosody and dialectics, practice of poesy, and Chaldee." In the third year they had "arithmetic, geometry, astronomy, exercises in style, composition, epitome, both in prose and verse, Hebrew, and Syriac."[1]

This discipline probably lasted well into the eighteenth century, though it is a sign of the decaying exclusiveness of emphasis on religion that the party which held to the old traditions was constantly attempting to enforce the rule that the President should expound the Scriptures daily to the students, and that the presidents were apparently unwilling to keep up the practice.

The College also prospered financially. In 1732 the estate of the College produced an income of £728, not including the endowments for special purposes. In 1727 Thomas Hollis had endowed a second professorship of mathematics and natural philosophy.

In 1737, on the death of President Wadsworth, the Reverend Edward Holyoke (A.B. 1705) was elected to the presidency, and served thirty-two years,—a longer term than has been reached by any president of the

[1] Quincy, *ubi sup.*, vol. i, pp. 190, 191.

University except President Eliot. His administration carried the College down to the threshold of the Revolutionary War. During his time, the unwritten constitution of the College underwent some development, through the raising of the constitutional question whether the Overseers had the right to initiate proceedings for the removal of a tutor. The Corporation in this case waived the technicality and removed the offender; but, to prevent the question from coming up again, they established the custom of appointing tutors for a fixed term of three years. At the same time, the ancient custom of taking the two senior tutors into the Corporation was allowed to lapse. Just before this another question arose through the necessity of removing a professor. The first Hollis Professor of Mathematics, Greenwood, had turned out badly. Even before he was elected, Thomas Hollis, the founder of the professorship, was disturbed by finding that Greenwood had left unpaid debts in England, and that in a short time he had spent £300 in conviviality, and had bought "three pair of pearl silk stockings." Hollis's distrust was well-founded; for Greenwood turned out to be more or less of a drunkard, and he had finally to be removed, in 1738. The action tended to confirm the control of the College by the Corporation.

During Holyoke's administration, the College, with all New England, was much moved by a great wave of religious enthusiasm. The way had been prepared by the eloquence of Jonathan Edwards, who stirred all men's minds with his vivid pictures of the burning tortures awaiting sinners in the world to come. On top of the strong wave of religious emotion which was thus created came George Whitefield, who went through New England conducting revivals. At Harvard College his

eloquence is said to have wrought wonderfully in the hearts of the students. His opinion of the religious state of New England was not flattering: he wrote, "As for the universities, I believe it may be said that their light has become darkness; darkness that may be felt, and is complained of by the most godly ministers."[1]

The Overseers, who continued to be stricter Calvinists than the Corporation, looked with favor on the revival, and appointed June 10, 1741, for a day of thanksgiving for "this work of God." Only five of the forty members of the board appeared at the meeting, however, and it was necessary to adjourn it. The chief fruits of the revival seem to have been a new flaming up of the religious discord which for so long made New England a place of hatred among brethren, and the stirring up of bitter attacks on the College. In 1744, the President, professors, tutors, and instructors found it expedient to publish "testimony against the Reverend Mr. George Whitefield and his conduct," in which they declared that his attacks on the College were uncharitable, censorious, and slanderous. When Whitefield replied, Dr. Wigglesworth, Hollis Professor of Divinity, issued a full and elaborate answer, in which he defended the tutors from the charge that they did not pray with their pupils, or watch their religious development, and he refuted the charge that the discipline of the College was lax. This controversy with Whitefield was the last of a theological character in which the governors of the College officially took part.[2] The College again took its stand on the liberal side and against those who bound the consciences of men under rigid rules.

In President Holyoke's term, in 1764, came one of the

[1] Quincy, *ubi sup.*, vol. ii, p. 41.
[2] *Ibid.*, vol. ii, p. 52.

A PROSPECT OF THE COLLEDGES IN CAMBRIDGE IN NEW ENGLAND

The "Burgis View"; the only known picture of the first Harvard Hall, burned in 1764

great calamities of the College, the burning of Harvard Hall, in which were kept the library and the philosophical apparatus. The fire occurred while the building was in use by the General Court, which had removed to Cambridge on account of an epidemic of smallpox in Boston, and it broke out during a bitter snowstorm on the night of February 2. The building was totally destroyed, with all its contents, and the new Hollis Hall, close by on the northeast, was barely saved. The loss was severe, especially in the destruction of the library. The catalogue, which has been preserved, shows that it contained about five thousand volumes, including the books which had been left by John Harvard. The library was an excellent collection for the times, strong in Hebrew and other Biblical books. It had all the Fathers, Greek and Latin, in the best editions, great numbers of tracts and sermons, an excellent collection of the Greek and Roman Classics, which had been given by Bishop Berkeley; the Transactions of the Royal Society, of the Academy of Sciences in France, and other scientific works, and a collection of the most approved medical authorities of the time, with a few ancient manuscripts in different languages. Besides the books, there were some anatomical cuts and two skeletons, a variety of curiosities, natural and artificial, and a fount of Greek type. The philosophical apparatus included various machines for experiments in mechanics, hydrostatics, pneumatics, and optics, besides an orrery, an armillary sphere, a box of microscopes, and a number of telescopes, one of them twenty-four feet long. The list shows that the College was for the time excellently equipped with books and with scientific apparatus.[1]

The gifts to restore the loss were prompt and gener-

[1] Quincy, *ubi sup.*, vol. ii, pp. 481 *ff.*

ous. The General Court, since the building had been in its occupation at the time of the fire, appropriated £2000 to rebuild the hall, and reimbursed the students whose books and furniture had been destroyed.[1] Gifts of money poured in, and there were also many gifts of books and of philosophical apparatus. Governor Bernard gave more than three hundred volumes. Thomas Palmer of London gave *Le Antichita Romane* and *Antiquities of Herculaneum,* making in all twenty volumes. The Province of New Hampshire gave seven hundred and forty-three volumes. Dr. Benjamin Franklin gave valuable scientific instruments, some of which are still extant. The gifts of books and apparatus were very numerous, and their value was estimated at over £1000.

The new hall was completed in June, 1766. Other buildings erected in President Holyoke's term were Holden Chapel, which was a gift from the widow of Samuel Holden, who had been Governor of the Bank of England, and Hollis Hall, which was built by the General Court, and named after the Hollis family, whose generosity to the College all through the eighteenth century was liberal and unremitting. In 1765, the College received a legacy of £1000 sterling from Thomas Hancock, for a professorship of Hebrew and other Oriental languages.

By this time the College had advanced well beyond the point at which it was not much more than an upper boarding-school. Corporal punishment had gone out of date long before President Holyoke's time. In 1733, in the administration of Wadsworth, William Vassall, a Senior, had brought suit against Daniel Rogers, one of

[1] For an itemized list of books and articles lost by the students, see the *Publications of the Colonial Society of Mass.*, vol. xiv, pp. 2-44.

the tutors of the College, for an assault, which was apparently an attempt to enforce the rugged discipline of the earlier days; and though the Superior Court of Judicature reversed the sentence which was imposed, it was recognized that the practice belonged to another age. President Holyoke, who graduated in 1705, said that even in his student days the practice was going out of use.

Just before the close of President Holyoke's administration a great step forward was made in the mode of instruction. Down to 1767 each of the tutors had carried a class through the college course, teaching them in all subjects. In May, 1766, a committee of the Board of Overseers reported a plan for distributing the different subjects among different tutors, one of whom should teach Greek, another Latin, another logic, metaphysics, and ethics, and a fourth natural philosophy, geography, astronomy, and the elements of mathematics. It also provided for a tutor in elocution, composition and English, rhetoric and other parts of the belles lettres, and that the divinity professor should instruct all scholars in divinity. The Corporation accepted the plan, and it took effect at the end of the winter vacation in January, 1767.[1]

About the same period there arose the weighty question whether tutors and upper classmen should continue to send Freshmen on errands. In May, 1760, the Overseers went so far as to recommend the prohibiting of "their being sent on errands after the ringing of the commons bell in the evening"; but the reform was too radical, and the custom continued. In 1761 a committee of the Overseers considered the whole system of fines, of which a curious list has been preserved. The

[1] Quincy, *ubi sup.*, vol. ii, pp. 133 and 497.

Overseers found it inexpedient entirely to abolish the fines, but they proposed that there should be a system of warnings, private and public, with notification to parents. This system lasted well beyond the middle of the nineteenth century in the form of private and public admonitions.

On the whole, the long presidency of Holyoke was a time of steady progress and liberalizing, but on his death, June 1, 1769, the College entered on a period of trouble. There was difficulty in finding a new president: John Winthrop (A.B. 1732), Hollis Professor of Mathematics, whose beautiful portrait by Copley is one of the adornments of the Faculty room at Harvard, declined the office, as did two other members of the Corporation.

The Reverend Samuel Locke (A.B. 1755), who was then chosen and accepted, apparently left little impression on the College. He served only from March 21, 1770, to December 1, 1773. He was succeeded in October of the next year by Samuel Langdon (A.B. 1740), who saw the College through the Revolution.

In the meantime politics were waxing warm. In 1768 the members of the Senior class, to show their patriotism, voted unanimously to " take their degrees in the manufactures of this country," and accordingly appeared at Commencement in home-manufactured clothes. In 1773 the prevailing republicanism of the time was manifested by a change in the Triennial Catalogue; and the names of graduates, which down to that year had been printed according to the rank of their families, were thenceforth arranged alphabetically. The students seem for the most part to have been on the side of liberty, though a few of the aristocrats manifested their

principles by bringing "India tea" into the College commons.

In 1773 the mistake was made of electing John Hancock treasurer. He accepted the honor, and wholly neglected the duties; and for twenty years the Corporation wrestled with the confusion into which his neglect had thrown the accounts. Final settlement was not reached until 1793, some years after Hancock's death.

Since Boston was the seat of the first resistance to British rule, it was inevitable that Harvard College should be much disturbed. During the occupation of Boston by the British troops in 1768, Governor Bernard adjourned the General Court to Cambridge, where they took possession of the halls of the College, apparently without first asking leave of the Corporation. A little later, however, when the old chapel was found too small, a committee was appointed to ask the Corporation for the use of the new chapel, and this was readily granted. When, in 1770, Thomas Hutchinson, as Lieutenant-Governor, convened the General Court, to meet at Harvard College in Cambridge, the Corporation addressed a formal remonstrance to him. In consequence the authorities thereafter made application to the Corporation for the use of the College halls. When Hutchinson, who was a graduate of the College in the class of 1727, was appointed Governor in succession to Bernard, although the members of the Corporation were opposed to him politically, they sent him a ceremonial message of congratulation on his appointment, and soon after the Governor visited the College in state, attended by the Lieutenant-Governor, the Council, the sheriff of the county, and a detachment of the troop of guards.[1]

With the opening of the war by the battle of Lexing-

[1] Quincy, *ubi sup.*, vol. ii, pp. 153-155.

ton, on April 19, 1775, the College found itself fairly in the storm center; for the militia of Massachusetts and the neighboring colonies were assembled in Cambridge. The students were sent away, and the College buildings were taken over for the use of the troops. The officers were quartered in private houses in the town. On June 15 the Provincial Congress made provision for the removal of the library and philosophical apparatus to Andover, where they would be safer, and on the same day the Corporation consulted the Congress as to the expediency of holding Commencement for the regular conferring of degrees. On July 2, General Washington took command of the army of the United Colonies on Cambridge Common, just at the gates of the College. By that time the confusion was so great that it was impossible to hold Commencement, and that year the degrees were conferred on a general diploma. In September it was decided to remove the College to Concord, where it had been ascertained that one hundred and twenty-five students could be boarded. Such portion of the books and philosophical apparatus as were essential were taken from Andover to Concord, and arranged on shelves in a private house.

After the evacuation of Boston, March 17, 1776, the Corporation and Overseers conferred the honorary degree of Doctor of Laws on General Washington, his only predecessor in this distinction being John Winthrop, who had received it in 1773. In June of this same year, the seat of war having removed from the neighborhood of Boston, it was found possible to bring the students back to Cambridge. The College had thus been in exile for fourteen months, and its affairs had become much disordered. The library and apparatus were still dispersed, and the buildings had not been im-

proved by their occupation as barracks. Before affairs were settled, the College was threatened with another disturbance of its quiet routine; for in the autumn of 1777 it was proposed that Burgoyne's troops should be quartered in the College buildings while they were waiting for shipment to Europe. The matter went so far that at the end of November the students were dismissed to their homes. The Corporation, however, firmly opposed this use of the buildings, and other quarters were found for the captives. On the whole, Harvard came through the period with surprisingly little dislocation.

The College was, however, not without its internal troubles. Though President Langdon seems to have kept its affairs pretty well in hand through the Revolution, just at its close he was forced out suddenly by an uprising of the students, who passed resolutions, and sent a memorial to the Corporation, charging him with "impiety, heterodoxy, unfitness for the office of preacher of the Christian religion, and still more for that of president." The attack came without warning, and Langdon yielded to the demand of the students; whereupon they passed resolutions almost directly opposite in tenor. The resignation was accepted by the Corporation, to take effect at Commencement, August 30, 1780.

The year 1780 was made notable in the history of the College by the inclusion in the Constitution adopted by the Commonwealth of Massachusetts of a provision expressly confirming to the President and Fellows the enjoyment of "all the powers, authorities, rights, liberties, privileges, immunities, and franchises which they now have or are entitled to have, use, exercise, and

enjoy." Under this Constitution the Governor, Lieutenant-Governor, Council, and Senate of the Commonwealth took the place in the Board of Overseers of the Governor, Deputy-Governor, and magistrates of the colonial government. The College thus retained its official connection with the State. The Constitution named the institution indiscriminately the *College,* and the *University* at Cambridge; and from this time may be dated the use of the latter term.

After President Langdon's resignation, it was nearly a year and a half before his successor, Joseph Willard, (A.B. 1765), entered into the presidency, on December 19, 1781. The early part of his administration was greatly troubled by the efforts to bring John Hancock, who had been treasurer from 1773 to 1777, to an accounting. Apparently he had taken the office largely from vanity, and had given it so little attention that no one knew where the College stood financially. He had carried the books and papers with him to Philadelphia, and subjected them to great damage from careless keeping. During his lifetime he resisted all efforts of the College for a settlement; and it was only after his death in 1793 that the new treasurer was able to recover from his estate what he owed the College, and then with the loss of compound interest. This was in spite of the fact that Hancock was a rich man, and left a large property.

The most pregnant event of President Willard's administration was the establishment of the "Medical Institution of Harvard University," the first of the professional schools to take its place by the side of the College. For the first few years the Medical School was not differentiated from the College. When in 1782, through the energy of Dr. John Warren (A.B. 1771),

the Corporation elected three professors of medical subjects, the lectures were first given in Cambridge, and were open to students of the College. The three chairs were shortly endowed, two of them by the widow and brother of Ezekiel Hersey (A.B. 1728), and the third by William Erving (A.B. 1753); and the Hersey Professorship of Anatomy and Surgery, the Hersey Professorship of the Theory and Practice of Physic, and the Erving Professorship of Chemistry, are the oldest medical professorships of the University. In 1810 the Medical Institution was moved to Boston, both for the sake of being near the hospitals, and because the two professors who lived in Boston found it almost impossible to give the time necessary in those days to make the journey to and from Cambridge. In its new quarters the school throve with renewed vigor and soon drew students from all over New England.

In the College there seems to have been a slight attempt to break away from the rigid discipline of the Fathers, though there were as yet few subjects to study besides the classics. In 1787 an advance in scholarship was made by substituting Horace, Sallust, Cicero *de Oratore*, Homer, and Xenophon, for Virgil, Cicero's Orations, Cæsar, and the Greek Testament. At the same time the number of exercises was increased, and some effort was made to see that the whole class did the work. Besides the classics, which constituted the greater part of the education, the Freshmen had instruction in rhetoric, elocution, and arithmetic; the Sophomores in algebra, and some other mathematics; the Juniors in Livy, Doddridge's Lectures, and the Greek Testament; the Seniors in logic, metaphysics, and ethics. All classes had instruction in declamation, chronology, and history; and the Freshmen and Sophomores were required to study

Hebrew, though with the option of taking French instead. An attempt to institute a system of public exhibitions by students selected through an examination by a committee of the Corporation and Overseers, in order "to excite the students to a noble emulation," seems to have excited them instead to a series of disturbances which caused the new regulations to be withdrawn; but the custom of holding public exhibitions continued down to about 1870.

During President Willard's time the College went through a crisis in its financial affairs, from which it emerged independent of state support. The Corporation in 1780 petitioned the General Court to pay to the President a permanent salary. The Court made a grant of £300 for a single year. After many applications for aid, with small responses from the General Court, the Corporation finally undertook the responsibility for all salaries and expenses. Fortunately, under the skillful management of the Treasurer, Ebenezer Storer (A.B. 1747), who had the effective aid of James Bowdoin (A.B. 1771), and John Lowell (A.B. 1760), the investments had prospered. In 1793 they amounted to $182,000.

President Willard died September 25, 1804, and it was nearly two years before the Corporation elected his successor, partly because Fisher Ames, their first choice, declined. The choice finally lay between Samuel Webber (A.B. 1784), Hollis Professor of Mathematics and Natural Philosophy, and Dr. Eliphalet Pearson (A.B. 1773), Hancock Professor of Hebrew, and a member of the Corporation. The latter during the interim bitterly opposed the election of the Reverend Henry Ware to the Hollis Professorship of Divinity, on account

of the latter's Unitarianism. The Corporation, however, by electing Dr. Ware and the Overseers by confirming him, definitely threw the weight of Harvard College on the side of the Unitarian movement and against the party which stood by Calvinism. When the Corporation, soon after, elected Webber to the presidency, Dr. Pearson resigned both his professorship and his seat in the Corporation, because he could no longer hope to "render any essential service to the interests of religion by continuing his relation to the College." The Corporation urged him to reconsider, but he declined to do so.

By thus putting the College on the liberal side in the current religious discussion the Corporation maintained its traditions, and actively upheld the liberty of individual inquiry and decision in matters of religion. At the same time they cut the College off from the great majority of the people of New England and the rest of the country; and the slow growth of the University all through the middle of the century was in part due to the fact that it was regarded, and in large part was governed, as a seminary for the leading classes of Boston, who had almost universally adopted the new doctrines.

President Webber's administration was short and uneventful. During his time Stoughton Hall was built (1805) from the proceeds of a lottery, and the funds for the building of Holworthy Hall (1812) were raised in the same manner. In 1805 John Quincy Adams was elected the first Boylston Professor of Rhetoric and Oratory, though under the terms of his acceptance his service was limited to a small number of lectures. It came to an end in 1810, when he was sent as minister from the United States to the Court of Russia. In 1805

$30,000 was raised by subscription to found a professorship of natural history and in two years the Botanic Garden was established. In 1810 the constitution of the Board of Overseers was modified by taking out of it the Senate of the State and substituting fifteen laymen to be elected by the Board itself. Besides these, the Governor, Lieutenant-Governor, the Council, the President of the Senate, and the Speaker of the House were *ex-officio* members of the Board, and there were fifteen ministers of Congregational churches. The rights of the University were guarded by providing that the act should not go into effect until approved by the Corporation and Overseers.

When President Webber died, July 17, 1810, the Corporation elected to succeed him the Reverend John Thornton Kirkland (A.B. 1789), who had been sixteen years pastor of the New South Church in Boston, and who in a singular degree had the confidence and affection of the most influential men of Boston in his day. He was liberal and open-minded, and possessed of an urbanity of manner that has left traditions to our own day. He was fortunate to have on the Corporation in the early years of his term such men as Theophilus Parsons (A.B. 1769), John Lowell (A.B. 1786), William Ellery Channing (A.B. 1798), William Prescott (A.B. 1783), and before its close Joseph Story (A.B. 1798), Nathaniel Bowditch, and Francis C. Gray (A.B. 1809); men who were admirable examples of the ability, cultivation, and public spirit which gave Boston such distinction all through the first two thirds of the nineteenth century. They were all strong Unitarians, and in politics convinced Federalists. Under their sagacious guidance the College entered on a period of pros-

perity and intellectual advance, though of no very wide influence on the country.

During President Kirkland's administration, which lasted until 1828, the College fairly became a university, for the Medical School was organized with a separate faculty in 1816, with five professors, and the Law School and the Divinity School were created. The Law School owed its origin to the establishment of the Royall Professorship of Law in 1815, under the will of Isaac Royall; and the Honorable Isaac Parker, who was Chief Justice of the Supreme Court of Massachusetts, was elected as the first incumbent, in 1816. Under the terms of the foundation he gave lectures to the Seniors. The next year the Law School was established, with a faculty consisting of Asahel Stearns as University Professor of Law, and Judge Parker.

Although one of the earliest objects of the College had been to train up ministers, there was no formally organized theological school until after 1815. The Hollis Professorship of Divinity was founded in 1721, the Hancock Professorship of Hebrew in 1764, and the Alford Professorship of Natural Religion, Moral Philosophy, and Civil Polity in 1789, but the duties of all three were performed in Harvard College. In 1815 the Corporation sent out an appeal to the friends of the University,—practically to the Unitarian body,—asking for funds to increase the means of theological education. The sum of $27,300 was raised, and a Society for Promoting Theological Education in Harvard University was formed to administer the fund. In 1819 the Hollis Professor of Divinity, the Hancock Professor of Hebrew, and the Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, with the Dexter Professor of Sacred Literature, were organized into a

faculty and the Divinity School came into being. In 1824 Divinity Hall was erected for its use. It was for many years wholly and frankly a Unitarian seminary.

During the same period, the question of the relations between the Corporation and the teaching force was finally settled. In 1806, when Chief Justice Parsons was elected to the seat on the Corporation left vacant by the resignation of Professor Pearson, the Corporation for the first time contained no member of the teaching force. In the next seventeen years nine vacancies on the Corporation were filled, but none of them by the election of a professor. Thereupon, when another vacancy occurred, the resident instructors, under the lead of Professor Andrews Norton, pressed the claim, first on the Corporation and then on the Overseers, that the word *Fellow* ought to mean a resident officer of the College. Neither Corporation nor Overseers acceded to this view, and it was settled for all time that there was no obligation to choose members of the Corporation from among the resident teachers.

In 1820 an attempt was made to open membership in the Board of Overseers to ministers of any Christian church. The proposal was approved by the Corporation and Overseers, but was defeated by an overwhelming majority of the voters of the State, to whom it had to be submitted as involving an amendment to the Constitution. The vote reflected the very strong feeling of the orthodox churches against the Unitarian movement.

At about the same time, a good deal of dissatisfaction showed itself concerning the state of the College, largely aroused by George Ticknor, who was elected Smith Professor of French and Spanish Languages and Literatures in 1817. He was abroad at the time of his election, and he stayed in Europe for three years more,

equipping himself for the duties of his charge. When he came back he brought with him new ideas as to the possibilities of university training. What the state of learning in the country was at the time may be judged from the fact that in 1814, before he went abroad, he could find no German dictionary in Boston, and German was not taught at Harvard until 1825.

Under the influence of Ticknor the Overseers appointed a committee of seven, with Joseph Story as chairman, which studied the whole question, and in 1824 made a report, recommending radical changes in the organization of the College. Many of the recommendations were adopted. Among the more important reforms were the organization of what had been known as the "Immediate Government" into the "Faculty of the University"; the organization of the Faculty into departments, each with its professor and sometimes an assistant; the classification of students into sections according to proficiency in their subjects, instead of alphabetically; the admitting of special students to instruction; more frequent and more vigorous examinations; the abolition of fines, and the substitution of a series of penalties, leading from warning to expulsion. The most important change of all was the inauguration of the elective system by allowing students to exercise some choice in regard to a certain portion of their studies. Juniors were allowed to substitute mathematics or ancient or modern languages for Hebrew, and modern languages for the calculus. Seniors were allowed to substitute natural history for astronomy, or an ancient or modern language for chemistry, mineralogy, and geology. The range of choice was not large, but it was a beginning.

An incidental result of the report of this committee

was the institution of an annual President's Report in print. The heads of the departments reported to the President on the amount and character of the work which was done in their departments, and this information he passed on in print to the Overseers. Gradually the practice arose that he should make some comments on the state of the University, and the series of Annual Reports by the President became in President Eliot's time important educational documents. The first President's Report in print was for the year 1825-26.

Some of these changes were too far in advance of the times, and in particular the election of studies was to be a source of contention for two decades, and then nearly disappear; but while Ticknor continued in his professorship, until 1835, he was a strong influence for liberal and scholarly ideas.

In 1828 President Kirkland suffered a stroke of paralysis, which brought to an end one of the most distinguished presidencies in the history of the University. During his time the faculties were increased by five professorships, and Holworthy Hall, the original building of the Medical School, Divinity Hall, and University Hall were built. The great achievements of his administration, as has been noted, were the organization of the University, which he left with four distinct faculties, and the great elevation of standards of scholarship in the College.

At the end of his administration, there were two hundred and fifty-five students in Harvard College; eighty-four students attending the medical lectures; six students in the Law School, thirty-three in the Divinity School, and six resident graduates. The investment of the University amounted to $381,682.57.

To succeed him the Corporation elected in January, 1829, Josiah Quincy (A.B. 1790). He served until 1845. In his time the University prospered, and the number of students gradually increased. In 1836, at the time of the two-hundredth anniversary of the College, there were two hundred and thirty-three students; fifteen years later the number had increased to four hundred and forty-eight. At the end of Quincy's administration there were nineteen professors. During his time, Professor Ticknor,—even after he resigned his professorship, in 1835,—and William H. Prescott (A.B. 1814), the historian, were strong influences for a liberal and scholarly policy in the College; and their views were reinforced by Edward Everett (A.B. 1811), George Bancroft (A.B. 1817), and Frederic Henry Hedge (A.B. 1825), who were among the first Americans to study at German universities, and who brought back with them ideas of scholarship that could not be satisfied by the prevailing system of recitations. Through such influences, the reaction from the liberal reforms of 1826 was retarded; and as late as 1844-45 only the work of the Freshman year was wholly prescribed, and in the upper classes the studies were largely elective.

During President Quincy's time four new professorships were founded; Gore Hall, which has just been taken down to make place for the Widener Memorial Library, was built in 1840 out of the great unrestricted bequest of Governor Gore; and Dane Hall was built in 1829 for the Law School. In 1840 President Quincy wrote the *History of Harvard University,* in two volumes, which has not yet been superseded.

At the end of Quincy's administration there were two hundred and forty-nine students in Harvard College, nine resident graduates, one hundred and twenty-nine

medical students, one hundred and fifty-three students in the Law School, and thirty-eight students in the Divinity School. The investments of the University had reached the sum of $706,615.24.

When Quincy resigned, in 1845, he was succeeded for the three years from 1846 to 1849 by Edward Everett, one of the most distinguished men of the time. He had been minister of the Brattle Street Church in Boston before he was twenty; he was elected Professor of Greek Literature at twenty-one, and spent five years in Europe preparing himself for the work, taking the Ph.D. at Göttingen in 1817. On his return, he became editor of the *North American Review;* in 1825 he was elected to Congress, and served in Washington until his election as Governor of Massachusetts in 1835; and in 1841 he went to London as Minister of the United States. When he was elected President of Harvard College, in 1846, therefore, he entered office with as many and as varied distinctions as were open to a man of his period. The choice, however, was unfortunate. The presidency was at that time cumbered with a multitude of petty duties relating to discipline and the care of the college property; and after three years Mr. Everett resigned in disgust, and was soon drawn into public life again.

Nevertheless, his short presidency left its traces on the University. For one thing, the Lawrence Scientific School was founded, and with Louis Agassiz as the first Professor of Zoölogy and Geology, Eben Norton Horsford as Rumford Professor of the Application of Science to the Useful Arts, and, in 1849, Henry Lawrence Eustis as Professor of Engineering,—entered on a career which was at first of extraordinary brilliancy. It was planned

to be what would now be called a graduate school, though in execution the instruction was limited to science and mathematics; but the genius of Agassiz as teacher and creator of faith in his subject had a profound influence on scholarship.

At the end of President Everett's term, the number of students in Harvard College had risen to two hundred and seventy-three; there were six resident graduates, one hundred and thirty-nine medical students, one hundred and three students in the Law School, nineteen in the Divinity School, and sixteen in the Lawrence Scientific School. The investments of the University amounted to $771,206.16.

To succeed Everett the Corporation, in 1849, elected Jared Sparks (A.B. 1815), who since 1838 had been McLean Professor of Ancient and Modern History. He was a historian and biographer of conservative inclinations, and averse to freedom of election of studies by students. His idea of a curriculum was a series of strictly prescribed subjects, taught by recitations, varied by occasional lectures. In his time the right of election was taken away from Sophomores, and somewhat reduced for Juniors and Seniors. The difficulty of enforcing a prescribed system with the increased number of subjects for which already there were professors is manifest from the fact that no Junior or Senior could take more than one language as a regular study; if he wanted to take both Latin and Greek, he had to take one of them as an extra.

The constitution of the Board of Overseers was a serious question at this time. As it stood, it was unwieldy, and was in danger of being mixed up with politics. In 1851, an act was passed by the General Court which made the board to consist of the Governor, the Lieuten-

ant-Governor, the President of the Senate, the Speaker of the House of Representatives, the Secretary of the Board of Education, the President and Treasurer of Harvard College, and thirty persons to be elected by the General Court. This act, being accepted by the Corporation and Board of Overseers, stood until 1865.

In 1852-53, the last year of President Sparks's administration, the number of students was as follows: In Harvard College, three hundred and twenty; resident graduates, fourteen; attending the medical lectures, one hundred and twenty-seven; in the Law School, one hundred and twenty-four; in the Divinity School, twenty; in the Lawrence Scientific School, forty-seven. The invested funds of the University amounted in 1853 to $899,888.07.

President Sparks was succeeded in 1853 by the Reverend James Walker (A.B. 1814), who had been a Fellow since 1834, and Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity since 1838. He too was conservative in his ideas. His chief interest was in perfecting the system of recitations, especially in reducing the size of the sections into which the classes were divided. This was made possible by a new tabular view which was worked out by Charles W. Eliot, then an instructor in mathematics. By skillful arrangement he produced a scheme by which the number of sections, and therefore the number of recitations on the same lesson, was increased for each member of the Faculty. The closer attention which resulted to the individual student resulted in some raising of the standards of scholarship.

Even then, however, and for some years later the examinations were chiefly oral, before committees appointed by the Overseers; and the catalogues of the

time declare that they might have an effect on the continuance of the student in college only "in some cases." As a matter of fact it was unusual for a student, after the Freshman year at any rate, to be sent away on account of deficiency in scholarship.

The most important addition to the University in President Walker's time was the Museum of Comparative Zoölogy, which was begun in 1859, partly through the bequest of $50,000 of Francis C. Gray for endowment, partly through an appropriation of $100,000 by the Legislature, also for endowment, and on condition that a sum sufficient for a building be raised by subscription. The sum of $71,000 was so raised, and one end of the present University Museum was erected. The collections which had already been brought together by Professor Louis Agassiz filled a considerable part of the building.

Besides the beginning of the Museum there were also built during President Walker's time Appleton Chapel, the old gymnasium (at present the temporary home of the Germanic Museum), and the President's house at 17 Quincy Street, which was torn down in 1913.

In 1859-60, the last year of President Walker's administration, the number of students was as follows: In Harvard College, four hundred and thirty-one; resident graduates, fifteen; attending the medical lectures, one hundred and forty; in the Law School, one hundred and sixty-six; in the Divinity School, twenty-one; in the Lawrence Scientific School, seventy-five. The total investments of the University had risen at this time to $1,145,647.20.

When in 1860 President Walker resigned, the Corporation elected to succeed him Cornelius Conway Felton (A.B. 1827), who had been Eliot Professor of

Greek Literature since 1834. His term was so short, for he died just two years after his election, that he left little mark on the policies of the University. Though the Civil War broke out in his time, it did not affect the University so much as might have been expected. The number of students in Harvard College was almost exactly the same in 1861-62 that it had been the year before, and in the next two years it fell off at the rate of only ten each year. The invested funds of the University increased in the two years of President Felton's term to $1,613,884.11.

With the election of President Thomas Hill (A.B. 1843) to the presidency in 1862 came the dawning of a new era in the history of the University. For the twenty years preceding, the policy of Harvard College had been back towards a system of strictly prescribed studies and recitations. The scheme of instruction just before his time is set forth in the Catalogue of 1861-62, as follows:—

All the studies of the Freshman and Sophomore years are *required,* except that French when taken by the Sophomores is taken as an *extra.* In the Junior year Mathematics, Chemistry, German, French and Spanish are elective studies, and in the Senior year Latin, Greek, and Italian are added to these electives; the rest are required.

In the last two years of the College course each student must take one of the electives assigned to his Class; he is also allowed to take another as an *extra.* The elective study, when chosen, becomes a required study for that year for those who choose it, and credit is given for it on the scale of rank, as in the case of required studies; but no credit is given for *extra* studies.

The required studies for Juniors at this time were four hours each week of Latin, three hours of Greek, with one lecture a week on Greek literature, two hours of chemistry, three hours of physics, two hours of themes, and one hour of declamation. For Seniors the required work was four hours of history, four hours of philosophy, two hours of ethics (in the second term political economy), one hour of physics, and one hour of forensics. The electives seem to have called for three hours a week of recitation, except the lectures in natural history, which occupied one hour a week.

To us to-day the most striking thing about the curriculum of the College in those days was the very small amount of ground which could be covered even by an eager undergraduate. In Greek for example, the total reading for the four years, including the Senior elective, was three books of the *Iliad,* the *Panegyricus* of Isocrates, some Lysias, Thucydides, and Demosthenes, the *Apology, Crito,* and *Republic* of Plato, the *Clouds* and the *Birds* of Aristophanes, and one tragedy, the *Seven against Thebes,* of Æschylus. The reading varied from year to year, and there was instruction in Greek composition, but so far as the Catalogue shows, no undergraduate had a chance for wider range of reading than is represented in this list. In mathematics the four years' course, including the electives, consisted of geometry, algebra, logarithms, and plane trigonometry for Freshmen; spherical trigonometry, analytic geometry, and algebra for Sophomores; algebra, and curves and functions for Juniors and Seniors. Instruction in history, all prescribed, was confined to Liddell's *History of Rome* for Freshmen, and for Seniors Stephens's *Lectures on the History of France,* Guizot's *History of Civilization in Europe,* and the constitutional history of England and

the United States. In chemistry Sophomores recited from Stöckhardt's *Principles of Chemistry,* and Juniors, as an elective, from Galloway's *Analytical Chemistry;* but by this time the latter course was accompanied by exercises in the laboratory. The Juniors could also study as an elective Dana's *Manual of Mineralogy.* In physics the Juniors had recitations in Herschel's *Outlines of Astronomy,* and Lardner's *Course of Natural Philosophy,* and lectures in mechanics and optics. The Seniors had lectures in mechanics and optics. All the physics was prescribed. In modern languages Juniors had a chance to read in elective courses Goethe's *Clavigo,* and Lessing's *Emilia Galotti;* in French, Molière; in Spanish, *Don Quixote,* and two plays of Calderon; in Italian, Dante, the latter with James Russell Lowell. The names of no other masterpieces appear in the Catalogue. In the biological sciences the Sophomores had a half-year of recitation in Gray's *Botanical Textbook,* and the Seniors had elective courses of lectures in botany, geology, anatomy, and zoölogy, each course consisting of one lecture a week for a half-year. There was no laboratory work in these subjects for students in the College.

Almost all the instruction, it will be noticed, was carried on by recitations. Laboratory work in the scientific courses of the College was barely beginning, though in the Lawrence Scientific School attendance was required in the chemical laboratory, and Professor Louis Agassiz in zoölogy and Professor Asa Gray in botany were giving their students " practical instruction " in their laboratories, and the former was taking his classes in geology on excursions in the neighborhood. As has been said, President Walker had been anxious that the system of recitations should be perfected, and instruction was confined to them.

The tabular view was most carefully worked out to distribute evenly the demands on each student's time; each student had a recitation early in the morning, another just before luncheon, and a third late in the afternoon. In 1861-62 prayers were at a quarter before seven, and recitations ran from eight o'clock to one, and from four to six in the afternoon. After Thanksgiving prayers were at a quarter before eight, and the morning recitations were all an hour later than in the autumn.

With President Hill's accession more liberal influences were to affect the instruction in the College, and in particular, stronger and more definite aspirations towards higher scholarly standards. Louis Agassiz and Benjamin Pierce, the mathematician, had great influence with him, and the efforts of Professor W. W. Goodwin (A.B. 1846), seconded by those of Professor E. W. Gurney (A.B. 1852) and Professor James Mills Peirce (A.B. 1853), did much to raise the standards of scholarship and widen the possibilities of study. By the end of President Hill's term—he resigned in 1868—the elective system had recovered all the ground it had lost. In 1867-68 only the studies of the Freshmen year were wholly required. Sophomores had seven hours a week of required studies, and two elective studies to be chosen out of Greek, Latin, pure mathematics, and applied mathematics. For Juniors there were required two hours a week of philosophy and three hours a week of physics. From the elective subjects—Greek, Latin, ancient history (in Greek textbooks), mathematics, chemistry, natural history, the English language, and German—he could "choose *three* or *two* (at his pleasure)." For the Seniors the required work was five hours a week in history, philosophy, and ethics, with three or two electives of three exercises a week each, chosen from Greek, Latin, mathematics,

physics, chemical physics, history, philosophy, and modern languages (French, German, Italian, and Spanish).

Quite as striking as the increased freedom was the increased range of the studies open to undergraduates. In Greek the reading of Freshmen included Xenophon's *Memorabilia,* the *Odyssey,* and Arrian's *Anabasis.* Sophomores might read the *Prometheus* of Æschylus, the *Birds* of Aristophanes, with some Demosthenes and Lysias; Juniors, Æschines and Demosthenes *On the Crown,* the *Electra* of Sophocles, and some Plato; Seniors the *Agamemnon* of Æschylus, the *Antigone* of Sophocles, and Thucydides. In modern languages Freshmen read Molière and Racine, and Seniors got to *Wilhelm Tell* and *Faust.* In the Junior year there was an elective on the English language which included Anglo-Saxon, early English, the Bible, Spenser, Shakespeare.

Another development of this time, which showed the aroused ambitions of faculties, was the enterprise of University Lectures, which it was hoped would open the way to the same sort of advanced scholarship as was to be found at the German universities. These lectures were usually given in short courses, either by professors of the University, or by other scholars, and were intended to create and advance interest in their subject. Most of the courses which were given dealt with various subjects in science. They did not make sufficient provision for continued and thorough work on the part of anyone except the lecturer, however, and on the other hand, though the lectures were of a rather popular character, they did not draw the general public.

In 1865 came the final severance of the last formal ties between the University and the state. By an act passed in that year the Board of Overseers was made to consist of thirty members, all of whom were to be elected

CHARLES W. ELIOT

President, 1869-1909

by the graduates of the College. From this time on the control of the University has been wholly in the hands of the graduates through their right to elect the Overseers, who in turn have the right of confirmation of all elections to the Corporation and the supervision of all acts of the Corporation. In 1880 seats on the Board of Overseers were opened to non-residents of the State of Massachusetts, and in 1902 the Legislature put wholly in the hands of the Corporation and Overseers the regulation of the franchise for choice of the latter.

The University grew, though for the most part slowly, during President Hill's time. In 1867-68 there were four hundred and seventy-nine students in Harvard College, fourteen resident graduates, three hundred and thirty students in the Medical School, one hundred and fifty-six in the Law School, twenty-three in the Divinity School, and forty-nine in the Lawrence Scientific School. The total investments of the University amounted in 1868 to $2,178,782.31. Harvard College Library had 112,500 books, and the total resources of all the libraries of the University amounted to 168,000.

Harvard University, as we know it to-day, is practically the creation of the administration of President Eliot, the longest since the foundation of the College. At the beginning of his forty years' term, Harvard was, as Mr. James Bryce is said to have told President Eliot at the time, "no real university, but only a struggling college, with uncertain relations to learning and research, loosely tied to a congeries of professional schools."[1] At the end of the period, chiefly through forces set at work in its earlier years, Harvard had become a real university of a new type, firmly organized,

[1] *Harvard Graduates' Magazine*, vol. xvii, p. 376.

vigorous, and offering instruction in almost all fields of human knowledge. How great was the transformation in these forty years can best be made clear by a brief review of the state of the University in 1869.

The College had made a beginning, but no more than a beginning, in breaking free from the deadening routine of elementary instruction in a few subjects prescribed for all students. The elective system, with which some experiment had been made in the days of President Quincy, but which had gradually languished and died, was revived in 1865, under President Hill; and in 1867 almost half the work of the three upper classes was elective. But the Faculty had only twenty-three members, the elective courses were strictly separated according to college classes, and there were only eight for the Sophomore class, eleven for the Junior class, and fourteen or fifteen for the Senior class. There were five hundred and twenty-nine undergraduates and five resident graduates. Except for some advanced work in the Lawrence Scientific School and in the Museum of Comparative Zoölogy, there was no chance for any study beyond the very moderate requirements for the A.B. degree. In Greek, for example, in 1868-69, the elective work for Sophomores consisted of the *Apology* and *Crito* of Plato, the *Alcestis* of Euripides, and half the first book of Herodotus; for the Juniors three books of Polybius with Professor Sophocles, or Æschines and Demosthenes *On the Crown* with a tutor (Professor Goodwin was away that year); and in the Senior year either the *Apology* and *Crito* of Plato, or the *Antigone,* the *Alcestis,* and some Thucydides. Beyond this there was no chance for study: the instruction offered was exhausted.

The Department of Chemistry consisted of Professor J. P. Cooke and a tutor; and the instruction, beyond the

required lectures and recitations of the Freshman and Sophomore years, was confined to an elective for Juniors in "practical chemistry," with lectures and six hours of laboratory work, and one for Seniors in crystallography for the first term, and in blowpipe analysis and in mineralogy for the second term.

The entry in the President's Report for the Department of History is as follows:—

In this Department instruction was given to the whole Senior Class by Professor Torrey and Professor Gurney; the textbooks used being the Abridgment of Story's *Commentaries on the Constitution,* Guizot's *Civilization in Europe,* Arnold's *Lectures,* and Hallam's *Middle Ages.* An elective class read with Professor Torrey May's *Constitutional History* and Mill on *Representative Government.* A special examination was held of students who had offered themselves as candidates for Honors after having pursued an additional course of study.

The Sophomore Class recited to Professor Gurney in *The Student's Gibbon* during the First Term.

The Freshman Class recited to Mr. Lewis, in the Second Term, in Duruy's *Histoire Grecque.*

These examples will serve to show the narrow limits and the low level of instruction in the College when President Eliot was elected.

The professional schools were in no better way. The Divinity School required for admission "a knowledge of the branches of education commonly taught in the best academies and high schools," but it did not require Latin and Greek. Down to 1870 it gave no degree.

In the Law School (which had fallen off both in numbers and in standards after the death of Judge Story in 1845), to quote Professor Langdell, "Students were

admitted to the School without any evidence of *academic* acquirements, and they were sent from it, with a degree, without any evidence of *legal* acquirements."[1] In other words, only a testimonial of moral character was required for admission, and after three terms in the School a student received the degree on recommendation of the Faculty, but without examination.

The Medical School was very loosely attached to the University. Its income, except about $3000 a year from invested funds, was not in the hands of the Treasurer of the University; and the fees were collected, and the income expended by the "Executive Faculty," which consisted of nine professors and two adjunct professors. The School was in effect a "proprietary school," in the sense that it was strictly under the control of its teachers, who determined its destinies without consultation with any other body. They made no money out of it, for their ambitions for advancing their subject were high. The only requirements for the degree of M.D. from the school were attendance at two courses of lectures, sixteen weeks long, only one of which had to be at the School, a certificate from some medical school or medical practitioner that the candidate had studied medicine three years, a dissertation on a medical subject, and the passing of five out of nine examinations, each of which was oral and only ten minutes long.[2] The instruction offered consisted of a course of lectures covering sixteen weeks in winter, a spring term of twelve weeks, a summer term of four weeks, and a fall term of eight weeks. A large majority of the students attended only the winter course of lectures, and presented certificates

[1] *Harvard Graduates' Magazine*, vol. ii, p. 494.

[2] W. L. Richardson, in *Harvard Graduates' Magazine*, vol. ii, p. 477.

from physicians to cover the rest of the work. The instruction was given mainly in recitations, with a few lectures. Apart from dissection in March and April there seems to have been nothing of the nature of laboratory work.

In the Lawrence Scientific School most of the students were registered in engineering and chemistry, with a few in zoölogy and chemistry. The Museum of Comparative Zoölogy was still in the hands of an independent board of trustees, as was also the School of Mining and Practical Geology, on the foundation created by Samuel Hooper. It was provided that students in engineering might pursue any studies except chemistry, and *vice versa* for students of chemistry. The requirements for admission were eighteen years of age and "a good common English education."

The Dental School was still struggling for existence, its instructors then, as ever since, making great sacrifices to support it, and having complete management of such financial interests as it had. The Bussey Institution had not yet been organized, though the funds had just come into the hands of the Corporation.

There was no agreement as to the academic year, and there were four different arrangements of term time and vacation in different departments.

At this time began the rapid concentration of these scattered materials for a university into a vigorous, united body with constantly growing strength and ambitions of service.

The new President had already maturely considered the problems involved in making higher education in America equal to meeting the enormous advances in knowledge made in the first half of the nineteenth century. He had recently spent two years in Europe,

chiefly in Germany, there not only studying chemistry, his own subject, but closely observing European systems of education. A few months before his election he had written some articles for the *Atlantic Monthly,* in which he set forth the principles of the " New Education " of which the American university, which should be " not a copy of foreign institutions, but the slow and natural outgrowth of American social and political habit," was to be the pinnacle. He was only thirty-five years old when he assumed the office, and no other member of the Corporation was under sixty; but they had selected him after mature consideration, and had persisted in their choice in the face of a first and second rejection by the Overseers.

Fortunately for his far-seeing plans new sources of revenue were made available for the College at the very beginning of his administration. An increase of the tuition fee from $100 to $150, which took effect in 1869-70, added $28,000 of fresh income, and the completion of Thayer Hall, built by Nathaniel Thayer, a member of the Corporation, added $10,000 more. The first installment of the Class Subscription Fund, amounting to $50,000, was paid in to the Treasurer in 1870.

With these new resources five new professorships in the College were established, in mathematics, history, entomology, Latin language and literature, and modern languages, besides a professorship of palæontology in the Scientific School, and the Bussey Professorship of Divinity, the funds for which had just become available.

The chief developments in the University under President Eliot's guidance may be considered under five heads: (1) The expansion of instruction in the College; (2) The raising and broadening of the requirements for admission; (3) The growing maturity of college life;

(4) The development of instruction for graduate students, with its necessary consequence, the advancement of knowledge; and (5) The raising of professional training in medicine, law, engineering, and finally in business, to the graduate level.

The first step in the development of Harvard College was the appointment of a dean to take charge of the undergraduates, who took over three quarters of the work which had been done by the President. The latter thus had his time free for the oversight of the whole University and the study of large problems, and the College was certain of closer administration. The standing of the position was insured by the appointment of Professor E. W. Gurney, whose judgment and wisdom were later recognized by his election, in 1884, to a seat in the Corporation.

The expansion of the elective system went on, with the addition of new courses. In 1872 it was provided that students who by examination anticipated any of the required courses could take elective courses in their place. Three years later it is noted in the President's Report that there were two hundred and eighty examinations for anticipation under this provision. In 1873 there was required of Seniors only certain instruction in composition, of Juniors only logic, psychology, and rhetoric. In the same year consecutive courses were established in geology and in zoölogy, and the Department of Fine Arts was created by the appointment of Mr. Charles H. Moore as instructor in drawing, and of Charles Eliot Norton as lecturer on the history of the fine arts and their relation to literature. The next year Mr. Norton was elected Professor of Fine Arts, and Mr. J. K. Paine Professor of Music. In the same

year the prescribed studies had been still further decreased in number and pushed back towards the Freshman year. President Eliot notes that except for exercises in writing there remained in the Sophomore and Junior years only "bits of rhetoric, history, philosophy, and political economy." In the same year advanced courses were added in Spanish, political economy, experimental physics, music, and fine arts, and courses in the philology of the Greek and Latin languages, in diplomatic history, and in international law. The reduction of prescribed studies went on until in 1883-84 it was voted to extend the elective system into the Freshman year, with the prescription of French or German for students who had not passed both at entrance, a few lectures in physics and chemistry, and rhetoric and composition. In 1881-82 the distinction which had been maintained between graduate and undergraduate courses was given up, for it was found that a student who had entered early on a subject easily got to the advanced courses before graduation; and on the other hand, among the increasing number of graduates from other colleges there were many who wanted and needed to enter some of the less advanced courses.

In the meantime the Faculty were not forgetting quality of work. As early as 1872-73 the passing mark in elective courses was raised from 33 to 40 per cent. Furthermore, it was voted that no student should be recommended for the degree who had not attained an average of at least 50 per cent in all his studies.

The first step towards granting the degree of A.B. for less than four years' residence appears in a vote passed by the Faculty in 1881-82, after two years of discussion, allowing a student who had anticipated a substantial proportion of the work for Freshmen to

complete the requirements for the degree in less than four years by taking extra courses. President Eliot was convinced that some such shortening of the College course was necessary to save the bachelor's degree from being squeezed out between a lengthened and improved high-school course and the increasing thoroughness of professional studies, and he returned again and again to the crusade for a shorter course. In 1890-91 the Faculty, after a lively debate, voted to reduce the requirement for the degree of A.B. from eighteen to sixteen courses, and to make the regular term of residence three years. The proposal, however, was not approved by the Overseers. In the meantime, an increasing number of students were graduating in three years by anticipating work of the Freshman year and taking extra courses in College; and there was consequently some uncertainty as to the meaning of the degree. In 1896 the Faculty again voted to adapt the requirements for the degree to a three years' residence, but the majority was so narrow that the vote was not presented to the Board of Overseers. This ended the effort to establish a three years' degree on a lower requirement; and in 1901 the Faculty, at the request of the Overseers, inserted in the *Annual Catalogue* a statement that the requirement in courses for the degree could be satisfied in four, three and a half, or three years.

The second of the great advances of the University in President Eliot's time was the raising of the standard of admission. The great improvement in the standards of study and education in the College rests on an even greater advance in the standards and efficiency of the secondary schools of the country, and a good portion of this latter advance may be fairly ascribed to the con-

stant interest of President Eliot in all educational questions, and to the gradual raising and improvement of the requirements for admission to Harvard, which led the way for a general advance in the requirements for admission to all the important colleges of the country. As far back as 1872 President Eliot could say in his *Annual Report*:—

> The examination for admission to Harvard is at least one year's study higher than the admission examination of any other college in the country. . . . The authorities of the College do not intend by any act of theirs to diminish this difference between Harvard College and all other American colleges; but they would very gladly see the other colleges raising their requisitions for admission to the level of Harvard's requisitions.

The requirements for admission in 1868-69 were narrow and rigid. In Latin they were confined to *Virgil*, Cæsar's *Commentaries*, a selection of Cicero's *Orations*, Latin grammar and Latin composition; in Greek, to the *Anabasis* and the first three books of the *Iliad*, Greek grammar and Greek composition; in mathematics, to arithmetic, and the elements of algebra and of plane geometry; in history, to short text-books in the history of Greece and Rome; and in English, to reading aloud. There were no real alternatives, and the examinations were oral. Some freedom was introduced within two years by providing that an examination on the mathematics and physics of the Freshman year might take the place of the Latin and Greek composition, and of two fifths of the reading in those languages.

In the meantime the Faculty was discussing a pretty radical restatement of the whole system of requirements. The result was announced in 1872-73 in a new set of

requirements, which President Eliot summed up three years later as follows:—

> The examinations in Latin and Greek have been greatly improved in subject-matter and in method; the mathematical requisitions have been sensibly increased: English and either French or German have been added to the requisitions; and natural science has got a foothold in the scheme. Furthermore, the few persons by whom mathematics are, for any reason, preferred to the classics, are permitted to offer certain advanced mathematics instead of portions of the Greek and Latin authors.

In this year, for the first time, examinations were held away from Cambridge. Cincinnati was chosen for the experiment, which proved so successful that other places were soon added.

The next advance was made in 1876-77 by introducing maximum requirements in two out of the four chief subjects, Greek, Latin, mathematics, and physical or natural science. The change involved no serious increase in the requirements, but it was a step towards making easier the substitution of mathematics or science for part of the classics.

The discussion over Greek continued, but it was nine years before any further step was taken. Then, in May, 1886, the Corporation and Board of Overseers gave their approval to a compromise measure which had been adopted almost unanimously by the Faculty the year before, after long argument over the fate of Greek. The important new points in this scheme were that modern languages and laboratory courses in physics and chemistry were added to the advanced subjects, and that it was made possible to omit even elementary Greek by making a larger offering of mathematics or science. Thus, for

the first time, it became possible for a boy to prepare for Harvard College at a school which taught no more of the classics than easy Latin prose.

In the meantime President Eliot was a leader in a movement for the general improvement of education in America, the results of which inevitably affected the conditions of admission to college. In 1892 the National Educational Association appointed a committee, which became known as "The Committee of Ten," to study the teaching of all the subjects usually found in secondary schools, and President Eliot was made chairman of the committee. Under his chairmanship, the Committee of Ten organized conferences on each of nine subjects, each conference consisting of ten members, drawn, like the Committee of Ten itself, from both college and school-teachers, and from widely separated regions of the country. Each of these conferences made an exhaustive study and report on its own subject, and these reports were in turn thoroughly digested and discussed by the Committee of Ten. The latter then prepared four programs, covering the four years of the secondary school, with varying emphasis on classics, science, mathematics, and modern languages; and they strongly urged that the doors of the colleges should be open to pupils who had followed any one of these four programs, or similar ones. The report had an immense and beneficent effect on the whole system of education in America; and President Eliot's leading part in it still further confirmed his reputation as a great educational statesman.

It was obvious that this report would call for a revision of the entrance requirements at Harvard; and in January, 1898, after nearly four years of deliberation, the Faculty adopted a scheme in which the range of election was greatly increased, and which made it possible

for a boy to avoid either Latin or Greek without penalty in the form of harder work in other subjects. The only prescriptions under this scheme were that a boy should be prepared in English, in one ancient language, and one modern language, in geometry, and in a science, and that he should offer at least two advanced subjects.

All through these years of discussion and advance the College has kept in the closest touch with the schools, and no change has been made which has not been submitted to experienced school-teachers. In compensation, the College is now in closer relations with the public-school system of the country than ever before. In the eight years from 1867 to 1874 the average percentage of students admitted from public high schools was 31 per cent, and in one year it fell to 24 per cent. In 1906-07 this percentage had risen to 43 per cent; and in 1912, with the aid of a new alternative plan of admission even more closely adapted to the general school system of the country, it had risen to 50 per cent.

The two changes which we have been considering—the responsibility thrown on the individual by the elective system, and the higher requirements for entrance—have together produced a marked change in the direction of maturity and sobriety in the tone of undergraduate life. The College to-day has few of the outbreaks of boyish effervescence which kept the Faculty and proctors of the earlier time guessing when their peace would next be disturbed.

The increase in age at entrance had begun before 1869. In 1856 the average age of the entering class was seventeen years and seven months, and in 1860 it had risen to eighteen years and one month. In 1869 it was eighteen years and five months. Since then it has varied, rising

above nineteen from 1887 to 1902, then gradually falling to an average below nineteen and above eighteen years and six months. A considerable proportion of the Junior classes and almost all of the Senior classes in the last forty years had therefore arrived at the age of citizenship.

Under such circumstances, it was inevitable that the old traditions of boyishness should gradually die out, and in the deans' reports there are constantly fewer complaints of disorder, and increasingly frequent mention of coöperation between Faculty and students.

The first of the traditional rights to commit disorder which fell was the right of Sophomores to haze Freshmen. In his report for 1870-71, Dean Gurney declared that "Unhappily all efforts to detect and bring to justice the perpetrators of the gross outrages in the winter of 1871 at a private house and in Stoughton Hall have thus far proved unsuccessful." The outrage in Stoughton was an explosion of gunpowder in the cellar, which nearly wrecked the building. The next year he reports greater progress: seven Sophomores and one Freshman having been suspended for disturbance on "Bloody Monday" night, the sentences had been remitted in view of an agreement signed by all members of the Sophomore and Freshman classes to refrain henceforward from hazing in all its forms. Thus hazing came to a timely end; for the class of 1876 had no experiences which they were under obligation to pass on to the class of 1877, and the class of 1877 had no experience in the matter at all.

Since that time there have been few outbreaks in which any number of students were concerned. In the early eighties there was occasionally some disturbance after athletic successes, and for a time the discovery

that proctors could be brought swarming to the yard by cannon crackers and bonfires stimulated the restless imagination of youth. When the Faculty appointed a committee to confer with the students, and issued an appeal to their good sense, and at the same time instructed the College carpenter to furnish wood for bonfires on Jarvis Field, both the fun and the desire to make trouble evaporated.

In 1885, when the Faculty first, under the compulsion of events, began to take notice of athletic matters and forbade intercollegiate football for a couple of years, a committee of conference consisting of five Faculty members and sixteen student members did much to soothe the disturbed feelings of the College. Two years later a thorough report on athletics, prepared by a committee of the Faculty consisting of Professors J. W. White, Chaplin, and A. B. Hart, went still further to quiet the alarm felt by undergraduates and some graduates that athletics were being systematically attacked, by making clear the faith of the Faculty, as President Eliot summed it up in his annual report, " that dyspepsia is less tolerable than a stiffened knee or thumb, and that effeminacy and luxury are even worse evils than brutality." In 1887-88 the reconstitution of the Athletic Committee, with three members each from Faculty, graduates, and undergraduates, was a pledge that has proved lasting of the faith of the Faculty and of the Governing Boards in the good sense and safe judgment of the College as a whole.

In the middle of the nineties another practice gained general acceptance among undergraduates which caused their neighbors in the town to regard them as young barbarians at play: this was the custom of celebrating the arrival of the mid-year period of examinations by

firing guns and other firearms out of the windows of the dormitories. By a fortunate accident an important athlete was taken with a smoking gun; and a committee of his fellows was formed to save him from his necessary fate. Through them an agreement was entered into by which the custom, which had already gathered the antiquity of five or six years and so ran to a time whereof no man could remember the contrary, was quietly put away with other traditions like hazing and rebellions. The same year a committee of three students, with the approval of the College as a whole, hunted out a man who had painted the statue of John Harvard, and forced him to leave college. A few years after this the ancient and celebrated society of the "Med. Fac." which from the middle of the nineteenth century or earlier had brought the keen intelligence of youth to the devising and execution of pranks that were irritating to the elders, was brought to a peaceful death by the concerted efforts of its past members, acting under the pressure of public opinion and of imminent danger of a prison sentence to one of its active members who, in the execution of the prank assigned to him, had fallen into the hands of the police. Thus again an ancient tradition of boyish disorder was done to death by the maturer sense of responsibility in the College at large.

Far more difficult than the quelling of actual disorder has been the problem of inducing the students as a body to look on their work as men's work, and to cease shirking it in the spirit of schoolboys. This is a problem which will perhaps never be worked out in any college belonging to this imperfect world; and it is always easy in discussion of it to lose sight of the fact that the idle and the floaters are on the surface, and therefore get a disproportionate share of attention. Moreover, a col-

lege will always be looked on by some busy fathers as an asylum to which they can commit their boys for the four most troublesome years of their lives. Nevertheless, the progress has been great, and it is true that now the great majority of undergraduates look on their studies with an interest felt by a fair smaller proportion in the days of strictly prescribed studies.

The dealings of the Faculty with the students during the last four decades have been a continuing series of experiments in letting them "taste freedom and responsibility." When Mr. Eliot became President he found still surviving the elaborate system of marks of censure for keeping students up to their attendance on church, prayers, and recitations. There was a multitude of petty rules: one forbade congregating in groups in the Yard; another, wearing any but a black coat on Sunday; another, lying on the grass in the Yard; another, smoking in the Yard; and there were many more. For all of these there was a system of penalties in the form of demerits of subtraction from the total number of marks earned by attendance and assiduity at recitations. The whole system of discipline was based on minor prescriptions, on which the undergraduates, with the perverse logic of youth, based a feeling that they had a vested right to go up to the very edge of the legal prohibition. In 1874 the Seniors were given freedom from the rules of attendance. The plan worked well, and it was soon extended to the Juniors. Gradually through this decade the Faculty was simplifying regulations, and in 1879-80 they were thoroughly revised, in order, as Dean Dunbar said, to make them "a body of instructions, informing the student of the steps to be taken by him in order to qualify himself for a degree or for any academic honors." In the same report, he

announced the extension of the principle of responsibility for attendance as follows:—

The Faculty determined to adopt the simple provision with respect to students of all classes, that habitual absence is *prima facie* evidence that the student is not fulfilling the purposes of his residence at the University, and calls for inquiry, explanation, and such action as may be found to be fitted to the special circumstances; and that irregularity of attendance, unless accompanied by good scholarship, is to be regarded and treated in the same way. No scale of penalties is stated, and no precise line of absences or scholarship is given, the design of the rule being to deal with individuals and not with sharply defined classes, and to deal with them by such flexible methods as are necessary in distinguishing between cases where the student proves his capacity to act upon his own responsibility and those where he needs more or less support from discipline.

To carry out this provision, the direct responsibility for good order and attendance was handed over by the Faculty to administrative officers. Five years' trial of the new principle showed the need of some slight concessions to the weakness of human nature, and in 1885-86 the Faculty required students to give proof to their instructors that they were working regularly and systematically in their courses. In the same year another change more than made up for this closer supervision. Attendance at morning chapel was made voluntary, and there was then no official means of knowing whether a student was in Cambridge or not. It was a period of delightful freedom for the birds of paradise, and in many cases they fluttered far from the nest. It was not long before absence from Cambridge became an open scandal, and in 1888-89 the Overseers put before the Faculty the necessity of attending to the matter. Under

this pressure the Faculty revised the regulations once more and established rules requiring prompt attendance after vacations and holidays, prompt notice to the College office of absence caused by illness or indisposition, and something like regular attendance and systematic work. With these safeguards " the development of the general policy of giving students liberty with responsibility " may be regarded as complete.

The success of any such policy must in the end depend on its administration. That the policy has been so successful at Harvard is largely due to the genius for dealing with young men possessed by Dean L. B. R. Briggs (A.B. 1875), who became Dean of Harvard College in 1891, and therefore bore the brunt of so administering the new rules as to make students believe in them. His faith in " the overwhelming predominance of good over evil in undergraduates," as President Eliot said in conferring the degree of LL.D. on him at Commencement, 1900, gave to the office of Dean a new meaning. Under him students began to come to the Dean's office of their own accord, to get counsel for themselves and for their friends, and the reign of " liberty with responsibility " was well balanced.

Coincident with this final step towards liberty with responsibility in matters academic went a notable step towards liberty with responsibility in religion. From the foundation of the College attendance at the regular religious exercises, daily and weekly, had been rigorously prescribed. Even the great enfranchisement of thought embodied in the Unitarian movement at the beginning of the nineteenth century did not shake the belief that young men should have no option about going to chapel services and to church.

In the latter third of the century, however, sentiment

began to change. As early as 1873 the Faculty had voted that attendance at daily prayers should be made voluntary. The Governing Boards moved more slowly, and it was not until 1886 that the Corporation and Board of Overseers, after four separate votes of the Faculty and two petitions from the students, finally gave their assent. Henceforward attendance at religious exercises, so far as the University was concerned, was left wholly to each student to decide for himself. It was understood at the time that the influence of the late Bishop Phillips Brooks was very powerful both in delaying the change, and in bringing it about when he was once convinced.

Before the change took place, the Corporation, acting with a committee of the Board of Overseers, had made the chapel services more attractive and more fitting to a body drawn from all varieties of religious persuasion, by putting them in the hands of a Board of Preachers, drawn from different denominations. Each of these preachers undertook a period of service, during which he conducted the short morning sevice in the chapel, and preached at the Sunday service. Besides this, he put himself at the service of students who wished to call on him in the pleasant rooms provided for the preacher in residence. There has been no difficulty in drawing ministers of various Christian bodies for service on this board; and they testify unanimously to its interest and value.

To come to the fourth great advance of President Eliot's administration, the change which did more than anything else to transform Harvard into a real university was the organizing of regular instruction for graduate students leading to the degrees of A.M., Ph.D., and S.D.

Instruction for graduates at Harvard was far from being a new fact. Indeed, the presence of resident graduates is probably as old as the College itself, and in all the catalogues of the nineteenth century there are small groups of resident graduates entered after the undergraduates.[1]

The Lawrence Scientific School was founded in 1846, largely to carry on advanced work in science, and this end was successfully accomplished under Professor Louis Agassiz, Professor Asa Gray, and Professor Wolcott Gibbs, and their colleagues and successors. Apart from pure science, however, the opportunities for graduate instruction at Harvard were meager and irregular. With men like Professor F. J. Child, Professor Benjamin Peirce, and Professor W. W. Goodwin on the Faculty there was little danger that scholarly research would languish or slumber; but there was no organized system by which students could take advantage of the learning of those eminent men, or of the collections of books in the Library, which were growing all the time under their direction. An ambitious student who wished to get any real knowledge of his subject and to learn methods of research, went to Germany.

Some attempts had been made in 1869 to remedy this defect. The University Lectures have already been described. In 1863 the Corporation, to make them more effective, authorized the professors in all departments of the University to associate themselves in order to improve these lectures. Nevertheless, the breakdown of the University Lectures was not long delayed. In his report for 1871-72, President Eliot wrote:—

[1] J. M. Peirce in Report of the Graduate Department, *President and Treasurer's Report*, 1879-80.

The " University Lectures " have now been tried for nine years. Although some temporary advantages and certain permanent improvements have resulted from them, it must be confessed that they have distinctly failed as a scheme for giving advanced instruction in philosophy, history, and the humanities, and that they have failed hopelessly, and in an unexpectedly short time. They have not induced Bachelors of Arts of this University to remain in Cambridge for purposes of systematic study, and they have not attracted to the University advanced students from other places.

In the mean time the Faculties and the Governing Boards had been giving time and thought to the matter and had worked out a plan which was incorporated in standing votes of the Governing Boards in the spring of 1872. Under these votes, the old degree of A.M., which for many years had been given to any respectable holder of an A.B. on payment of a fee three years after graduation, was now to be conferred only on examination and after a year of residence. The new degrees of Ph.D. and S.D., with prescriptions borrowed from the German usage, were established; the former to be conferred after at least two years of residence, the latter after three, and both only on examination and the presentation of a thesis showing original research. These degrees were to be administered by the University Council, which consisted of the President, professors, assistant professors, and adjunct professors of the University. With these votes serious and substantial study and research were definitely launched at Harvard.

Stimulus to graduate work was provided by the foundation, in 1871, of the John Thornton Kirkland Travelling Fellowship, through a gift from the Honorable George Bancroft (A.B. 1817), in memory of President Kirkland, and by the Parker Fellowship, in 1873, for

graduate study at home or abroad. But at the same time advanced courses were instituted in various subjects, including Sanskrit, classical philology, diplomatic history, and international law.

In 1876-77, five years after the announcement of the new degrees, the President reports that there are forty-five candidates for the graduate degrees, including twenty for the Ph.D. and five for the S.D.; and in these first five years there were conferred a total of thirty-seven degrees of A.M., fourteen of Ph.D., and two of S.D. The experiment was so successful that President Eliot pledged the Corporation to its support through opening and improving the laboratories and museums and increasing the store of books in the Library.

In 1877-78 the " Graduate Department " first appears in the annual catalogue under that title, with a list of twenty-seven courses specially for graduates, besides the courses in Harvard College, which also were open to them. In 1881-82 there were forty-eight courses listed under the Graduate Department, though not all were given in that year. The next year and for several years to come these courses were included with the general list of electives.

At last, in 1889-90, after nearly twenty years of organized graduate courses, these points had become clear: that this instruction fell almost wholly under the faculties at Cambridge; that it was inextricably connected with the instruction of undergraduates, the two depending on and mutually strengthening each other; and that the time had come for it to be organized more firmly into a distinct school. At the same time, the character of the Lawrence Scientific School had considerably changed, and its instruction had almost grown together with that offered in Harvard College. Accordingly a thorough

reorganization was worked out, by which the faculties of the College and of the Lawrence Scientific School and the Academic Council were dissolved, and a new Faculty of Arts and Sciences was created, to which was committed the charge of the College, the Lawrence Scientific School, and the Graduate School, each of them to have its own administrative board. At the same time the courses offered by this joint Faculty were rearranged in three groups, "primarily for undergraduates," "for graduates and undergraduates," and "primarily for graduates." This flexible arrangement recognized the close relations existing among the courses, and the way in which the body of instruction in any subject imperceptibly passes on from elementary to advanced.

The Graduate School of Arts and Sciences has steadily and at times rapidly increased in size. In 1872-73 there were in all twenty-eight students, in 1882-83 there were fifty-six; in 1892-93 there were two hundred and fifty-six; in 1902-03 there were three hundred and twenty-five; and in 1908-09 there were four hundred and twenty-nine. A good test of the usefulness of the School lies in the number of the highest degrees conferred, for hard and long-sustained work has been necessary to win them. At Commencement, 1873, the degrees of Ph.D. and S.D. were conferred for the first time by the University, the former on two candidates, the latter on one. In 1883 there were five degrees of Ph.D. In 1893 there were twelve degrees of Ph.D. and one of S.D. In 1903 there were twenty-eight degrees of Ph.D. and one of S.D. In 1909 there were thirty-eight degrees of Ph.D.

The fifth great group of changes in the University resulted in making professional study in the professional schools graduate work. Of all the changes wrought

during the administration of President Eliot those in the Medical School are the most spectacular.

The state of affairs, as previously described, had already created discussion among some of the younger instructors of the School; and the discussion was immediately brought to a head by President Eliot. He wrote in his first annual report:—

> The whole system of medical education in this country needs thorough reformation. The course of professional instruction should be a progressive one, covering three years; the Winter Session and the Summer Session should be amalgamated; and the student should give his attendance at lectures and recitations, at hospitals and laboratories, during the whole year. The Medical Faculty have been actively discussing these much-needed changes, and will shortly rearrange their programme of instruction.

The discussion in the Medical Faculty was thorough and, it is said, heated; but in his second annual report, President Eliot could announce that the changes he had outlined had gone into effect at the beginning of the year 1871-72. The main points of these revolutionary changes were: (1) regular instruction running through the same academic year as in the rest of the University; (2) a progressive course covering three years, in which each student would study all the recognized subjects of medical instruction; (3) full laboratory work in place of or in addition to lectures and recitations in anatomy, physiology, chemistry, and pathological anatomy; and (4) the passing of written examinations in all the main subjects instead of the passing of oral examinations in a part of them.

At the same time, the Corporation assumed full charge of the receipts and expenditures of the Medical School,

thus removing the chief remaining characteristic of the "proprietary school." At this time the entire endowment of the School was $40,000.

The reforms were eagerly received by the students, and in 1871-72 the President reported that the chemical laboratory was crowded, and the microscope room in constant use. In the same year the Corporation appointed professors of ophthalmology, hygiene, mental diseases, and dermatology, though the professors served without pay. The degree of M.D. was given under the old regulations for the last time in February, 1874. In that year seven eighths of the students stayed for the second term, though no other medical school in the country required attendance for more than a four or five months' session. It was not until 1876-77 that any other school followed the example of the Harvard Medical School. In 1879-80 the School took another step forward by setting up a voluntary four years' course beside the three years' course. This year land was bought in a central position for a new building, and the next year two members of the Faculty, within three weeks, raised over $100,000 for the erection of the building. In the ten years after the School had ceased to be in any sense a private venture, and had become a constituent part of the University, it received by gift and bequest $270,000.

In these ten years important steps had also been taken to improve the quality of the men who came to study medicine. The majority of the students at the School in 1870 are described as "greatly inferior, as regards education and general standing, to those who enter other departments of the University."[1] A considerable improvement was made at once by requiring three full

[1] Dr. W. L. Richardson, *Harvard Graduates' Magazine*, vol. ii, p. 479.

years of work for the degree. In 1873-74 more than one third of the students held degrees, as against less than one fourth three years before. In 1874-75 examinations for admission to the School were established for all candidates who did not come with a degree. In 1880 the Faculty doubled the number of subjects in this requirement; and by this time President Eliot could say:—

In this University, until the reformation of the School in 1870-71, the medical students were noticeably inferior in bearing, manners, and discipline to the students of other departments; they are now indistinguishable from other students.

For the next thirty years the history of the School is a history, no longer of a revolution, but of a steady, rapid advance and expansion. In those thirty years medical science was completely made over by the discovery of the microscopic forms of animal and vegetable life, which are the principal causes of diseases; by the enormous advances of chemistry, and by the great improvements in the technique of microscopy. These great improvements in the science altered the whole idea of the aim of medical education and effort, and preventive medicine began to take its place by the side of curative. As early as 1884 President Eliot urged the endowment of a professorship of public health or preventive medicine.

When in the autumn of 1883 the School moved into the new building on Boylston Street it had developed the laboratory idea to a point that was hardly conceivable twelve years before. The laboratories were now the chief feature of the new building, and the Dean of the

School for the first time, in his report for 1883-84, recounts the scientific papers produced in them.

From the time that the four years' course was established the School gained slowly in numbers. In 1887-88 the number of subjects of medical research and discovery had so increased that the work of the fourth year was made elective, and two hours a week of elective work were introduced into the third year. In 1888-89 summer courses were established, chiefly clinical. In the same year the School received from Dr. Henry F. Sears a gift to build a laboratory for the rapidly increasing department of pathology. By 1891-92 it had so increased in importance and in its scientific possibilities that it was decided that a professor of pathology should be appointed who should give all his time to teaching and research. In the same year a professorship of histology and human embryology was established, an associate professor of physiology was added, and the work in bacteriology was enlarged. In the next year the change in the conditions of medical education was recognized by putting the professors in the Medical School who were giving their full time to the School on the same level of salaries as the Faculty of Arts and Sciences. Henceforward, it was seen, some important medical subjects, which had disconnected themselves from practice, would demand the whole time of a professor.

In 1896-97 the President announced that the School had more than doubled in numbers since the completion of the new building in 1883, and that since the new methods of education demanded more space for each student, the School had outgrown its quarters. He pointed out also, that for its full usefulness the School should have a hospital attached to it. Five years later he was able to announce the successful completion of the

great "Medical School Undertaking," which involved the purchase and holding for the School of a large tract of land, and the raising of nearly five million dollars for buildings and endowments. An account of these buildings and their equipment will be found in Chapter III.

The improvement of the equipment of the School, however, was not the only care of the authorities. The Faculty noted with disturbance that the proportion of college men entering the School, which had risen to a maximum of 53.9 per cent in 1884, had under the increasing requirements for the degree rapidly fallen off again, until in 1893 it had dropped to 23 per cent. The same falling-off in the percentage of college graduates had taken place in the Law School. After careful consideration the Faculty of the Medical School voted in 1895-96 that after the year 1900 candidates for admission to the School must come with a degree. As a consequence of this vote the number of the entering class was reduced by more than one half; and even with the advantages of the new buildings the School has not yet recovered in numbers. Fortunately the endowment raised for the support of the School in the new buildings made it possible for the work to go on, with a constantly increasing amount of research.

Coincident with the complete making over of medical education went a corresponding advance in dental education. In the history of the various faculties there is no finer record of sacrifice for the sake of improving and elevating a profession than that made by the Faculty of the Dental School. Loosely attached to the University in 1869-70, as a kind of step-brother of the Medical School, it had only twenty-seven students, and its demonstrations and practical instruction were carried on at

the Dental Infirmary of the Massachusetts General Hospital. In 1871-72 the Corporation assumed the financial affairs of the School, and a summer session was established, as a first step towards a term as long as that in the other departments of the University. Three years later this end had been accomplished; and besides, every candidate for the degree was required to spend at least one full year in the School, and the fees were raised. The severity of these requirements as compared with those of other dental schools cut down the numbers, and for some years the professors served without pay. By 1882-83 the School was beginning to draw students from abroad, and the payment of small salaries to the professors was resumed. In that year its numbers had risen to thirty and five years later to forty-two.

The reputation of the School was now secure, and gradually requirements for admission were established and increased. After 1901-02 these requirements were made equal to those for Harvard College. The number of students had now risen to one hundred and five, and the School had an endowment of $77,000. In 1907-08 the Faculty of the Medical School recommended that the Corporation advance $80,000 out of the Medical School funds towards a building for the Dental School. With this sum, and a subscription to which the graduates of the Dental School contributed generously, a new building next to the buildings of the Medical School was assured. Thus the Dental School entered on a new period of well-deserved prosperity.

Though the revolution in the Law School during President Eliot's administration was as complete as that in the Medical School, and has had even wider effect throughout the country and even in England, it was sooner completed, for the common law has not also

simultaneously undergone a revolution which has carried away all earlier landmarks, as has happened in the case of medical science.

The Law School was still, in 1869, modeled upon a lawyer's office: the fee was the same as that paid in offices, and the School furnished its students with text-books.[1] The Faculty never had formal meetings; and President Eliot tells of the humorous surprise with which Governor Washburn, then Dean of the School, met him when he first visited Dane Hall. The course was nominally eighteen months, but the students were not divided into classes except for the moot courts, and all the instruction given each year, except one course for beginners, was intended for the whole School. There were no examinations, either at the end of courses, or for the degree. The library of the School, which in 1845 had been considered the largest and best law library in the United States, had been wrecked through careless use and almost complete absence of regular oversight. There were three professors in the School, and one hundred and twenty students in the first term of 1869-70. No one is designated as Dean in the annual catalogue.

In December, 1869, Professor Parsons resigned from the Dane Professorship. C. C. Langdell (A.B. 1851) was elected to succeed him, and the next year was made Dean of the School. Of the circumstances of the appointment something will be said in Chapter III; and there also will be described in full the "case system" of teaching law which Professor Langdell at once introduced into one of his own courses, and which rapidly spread, first throughout the School, and then to all the

[1] C. C. Langdell, in *Harvard Graduates' Magazine*, vol. ii, p. 492.

leading law schools of the country. Under this system a student of law was sent to the books in which were contained the reports of the cases decided wherever the common law prevails; there he learned the facts on which the decisions were based, and the actual opinions and reasoning of the judges. At the same time a permanent librarian was added to the staff of the School, who gave his whole time to the library, and within ten years over $34,000 was spent on restoring and increasing the collection. The regular residence required for the degree of LL.B. was raised from eighteen months to two years; and examinations were instituted at the end of each course, the passing of which was required both for promotion to the second year and for the degree. The tuition fee was raised to $150.

The first effect of these rigorous changes was to reduce the number of students; but by the second year the decrease was made up, and nearly two thirds of the students were college graduates, while a few of the best students were staying for a third year of study. In 1872-73 the late James Barr Ames (A.B. 1868), then just out of the School, was appointed assistant professor. This was a radical departure from the established practice, for law schools heretofore had sought for professors only lawyers of established reputation. The appointment inaugurated a new profession, the teaching of law.

In 1873-74 James Bradley Thayer (A.B. 1852) was elected Royall Professor of Law, and in the next year John Chipman Gray (A.B. 1859) was promoted to the Story Professorship. They, with Professor Ames, and under the leadership of Dean Langdell, brought the School to a success and reputation which soon made necessary the enlargement of the Faculty. In 1875-76, under the steady pressure of Dean Langdell for thor-

oughness and breadth in legal education, the course for the degree was lengthened to three years, the change to take effect with the class that entered the School in 1877-78. In his report for the next year President Eliot, in summing up the advance of the School, described how seriously it had outgrown its building. Two years later he was enabled to announce the promise of a new building, on an ample scale. Before the new building was ready a new professorship was endowed, and $47,000 was raised for the purchase of books for the Library.

Up to this time there had been some irregularity in the growth of the School; and when it moved into the new building in the autumn of 1883 the number of students was less by twenty than in the preceding year. The depression was temporary, however, and within a year or two the numbers were slowly mounting again. Lawyers had felt some hesitation over the new and strange way of educating young men for the profession; the School was said not to be " practical "; and the habit of the professors of laying foundations for legal principles in the Year-Books of the Middle Ages seemed to many of the older generation academic and fantastic. As the graduates of the School entered the offices in Boston and New York, however, and then passed on into practice, they were found to have a grasp of legal principles and a habit of thinking law that was in the highest degree " practical "; and soon the demand from lawyers for the graduates of the School could not be filled. Before 1890 the increase in the number of students became rapid, and by that year the School had outgrown the new building which in 1884 had seemed large enough to hold it for a generation.

Henceforward the history of the School is of growing prosperity, of steadily more rigorous standards, and of

numbers that could not be kept down. With the increase of numbers it could not help being prosperous financially; for since the range of elective studies is very limited in such a subject as law, the number of the Faculty could never be very large. The School therefore soon acquired a large balance at the Treasurer's office; and though salaries were raised to a point considerably above the level in the rest of the University, in 1905 it was possible to build a large and expensive building out of the surplus. It was none too soon for the convenience of both Faculty and students, for in 1903 the President notes that the number of students had increased four times over that of thirty years before, and had doubled in ten years. In 1908-09 there were six hundred and eighty-four students.

This great increase was in spite of steady heightening of the requirements for entrance. In 1877, examinations for admission had been instituted for all applicants who were not college graduates. In 1893 the Faculty took the further step of announcing that after 1894-95 only graduates of colleges of good standing and persons qualified to enter the Senior class of Harvard College would be admitted to the School at all. In the first year in which this vote went into effect there was some falling off of numbers in the entering class, but the increase very soon began again. In 1899 the Faculty of the School, finding that the men who entered with some of their work in Harvard College still unfinished were not doing well, raised the requirement for entrance so that men from Harvard College must have done all their work for the A.B. degree before entering the Law School. Since that time the School has been strictly a graduate school. At the same time the Faculty have in various ways raised the standard of work in the School, in order to keep the

numbers down, and to keep only young men of distinguished ability.

From the beginning of his administration Dean Langdell insisted that the Library of the School was the very heart of legal education. If men were to know the common law they must have access to the common law as it has been worked out in many courts in hundreds of years; and the decisions of these courts as recorded in the reports must, therefore, be made accessible. In 1870 he introduced radical changes in administration, both to protect the books, and to make them more available for study. The Dean's ambition was to bring the Library back to the position it had held twenty-five years before, of being the best legal library in the country. In twenty years he could safely declare that it had reached that position, with the possible exception of the Congressional Library at Washington. In 1890 there were 25,000 volumes in the Library. In 1899 this number had doubled; and in 1909 it had again more than doubled, and the Library contained 115,000 volumes.

In the Divinity School the slack academic ideas of the mid-nineteenth century had almost obliterated standards; and in 1868-69 the Faculty, which had only two resident professors, had ceased to enforce a knowledge even of Greek and Latin for admission. In 1869-70 a first step was taken towards a restoration of the ideal of scholarship as part of the training of ministers by restoring the requirement of these languages. In the same year the degree of Bachelor of Divinity, for the first time, was conferred after examination. Heretofore no degrees had been granted, but persons who had spent three years in the School were held to have graduated, and were so entered in the Triennial Catalogue. In 1870-71 President Eliot announced that the Divinity

School was to be thoroughly rehabilitated; and he set forth the principles which were to govern the making of a scholarly place of training for ministers as follows:—

The pulpits of the country are not going to be filled by geniuses; if they were there would be no need of theological schools. They are to be filled by common men of good natural parts, who have been carefully trained for their special work. These men should be scholars by temperament, education, and inveterate habit, else their congregations will drain them dry in a year or two. Moreover, ministers, having none of the material or adventitious means of gaining influence and commanding respect in the community, need, both as individuals and as a class, all the support and moral strength which the possession of ample learning can give. To breed such men of solid learning is the main function of a theological school connected with a university.

The next year a professorship of New Testament Criticism and History was established and filled; it was voted that after 1874 no person should be held to have graduated at the School unless he had received the degree of Bachelor of Divinity; and a permanent librarian was appointed to care for the collection of books, which was considerable, but which had suffered for lack of care. In spite of these improvements the number of students made no gain and in 1875-76 it had fallen to twelve, with three special students. In that year President Eliot pointed out that the proportion of ministers among the graduates of the College in the decade 1861-70 was less than six per cent. The endowment of the School was small; and when Professor Stearns resigned the Parkman Professorship of Theology in 1878, its income was so meager that the vacancy could not be filled.

A serious effort was therefore made to increase the funds of the School, and by 1879 $170,000 had been raised. For several years the School had limited its pecuniary aid to students who had proved intellectual capacity. The number of students had somewhat increased, but was still small. By 1881-82 it had risen to thirty-two.

In this year the Faculty of the School, undeterred by fear of again depleting it, voted to recommend to the Corporation that only bachelors of arts be admitted to regular standing in the School, and that no other persons be admitted as special students except after a satisfactory examination in Greek and Latin. In the same year the Corporation voted to fill the Hollis Professorship of Divinity, which had been kept vacant for forty-two years in order that the slim endowment might increase, and the Winn Professorship of Ecclesiastical History. By a fitting chance the new incumbent of the Hollis Professorship, who was a student of Assyriology and other Semitic Languages, was a Baptist, the first incumbent of the chair to belong to the same denomination as the founder. The Faculty of the School was now well distributed among the denominations, for it included three Unitarians, two Baptists, and one Orthodox Congregationalist. It thus fairly fulfilled its profession of being unsectarian, in spite of the fact that, because its endowment had come largely from Unitarians, it was understood that at least two professors, including one professor of theology, should always be Unitarians.

With this increase in the Faculty came general prosperity; and in 1888-89 the President noted that the number of students had doubled in the last three years. Six years later, after frequent urging from the President, the tuition fee was raised to $150, and theological

education stood fairly on a plane with other departments of the University. Moreover, the School was so strong that this increase of fee had no effect on the enrollment. Since that time there has been no serious change of policy, but the course has been gradually strengthened, especially in the direction of social service. In 1908-09 there were thirty-six students, representing twenty-five colleges and twelve theological seminaries.

In 1907-08 arrangements were completed by which the Andover Theological Seminary removed to Cambridge, and though retaining its own organization, entered into close affiliation with the Harvard Divinity School. This alliance greatly strengthened the instruction of both Schools, and the amalgamation of their libraries produced a collection of books unequaled in the country for the subjects which it covered. It helped still further to emphasize the purpose of the Harvard Divinity School to be non-sectarian.

The fortunes of applied science in the University have greatly varied during President Eliot's administration, and even the name of the department has changed. In 1869 the purpose of the Lawrence Scientific School was ambiguous. It had been founded with very liberal conditions, which covered not only the application of science to practical arts, but instruction and research in natural history, and even left a place for advanced instruction in the classics.[1] Its early purpose had been largely shaped by the comprehensive mind and enormous energy of Louis Agassiz, who was brought from Switzerland as the first professor of zoölogy and geology: the very comprehensiveness of his chair—

[1] *President's Report*, 1846-47, p. 7; *Annual Catalogue*, 1846-47, 2d Term.

Dr. Holmes would have called it a settee—shows how little differentiated, and how vague, the aims of science were two generations ago. For chemistry Eben Norton Horsford was elected to the Rumford Professorship on the Application of Science to the Useful Arts, which had been founded in 1816 under the will of Benjamin Thompson, Count Rumford. In 1849 Henry Lawrence Eustis (A.B. 1838) was elected to a Professorship of Engineering. In the first few years of the School there were regular departments of chemistry, zoölogy and geology, and engineering; but instruction was also offered, "should a sufficient number of students require it," in botany, experimental philosophy (now known as physics), anatomy and physiology, astronomy, and mathematics. The first announcement of the School, in the annual catalogue of 1846-47, states its purpose as follows:—

In the course of the past winter, arrangements were made by the government of the University for the organization of an advanced School of Science and Literature. It is intended that instruction should be given in this school to graduates and others, in the various branches of exact and physical science, and in classical learning. The pure and mixed Mathematics; Astronomy, theoretical and practical; Chemistry, in its various branches, theoretical and operative; Civil Engineering, and generally the application of science to the arts of life and the great industrial interests of the community, with the several branches of Natural Science, will be pursued in the Scientific Department. The Classical Department will be mainly devoted to those studies which form the preparation for academic life.

Under the last rather cryptic sentence there seems to have lain the intention to establish instruction in philology and other so-called scientific modes of studying

literature, so as to create what we should call to-day a graduate school, though no requirement for entrance was made beyond that of age, which was set at eighteen years. As a matter of fact the students in the early years came well up to the ambitions of the founders; probably no institution in the country has had a set of students so many of whom came to distinction as those in the early years of the Lawrence Scientific School. The numbers increased rapidly at first under the stimulus of the novelty of the idea, the high distinction of the professors, and the opportunity of escape from the constricting bonds of the prescribed system of studies, which through this period was growing narrower and more deadening. Then came a period of stationary numbers and of uncertainty of aim, in which the School stood in 1869.

In that year there were forty-three students, barely more than half the number of three years before. The subjects of instruction were much the same as twenty years before, except that anatomy and physiology, experimental philosophy, and astronomy had disappeared, and mineralogy, under Professor Josiah P. Cooke, Jr., had been added. The formula in the catalogue concerning students is: "Professor Gibbs will receive Special Students to the course in experimental chemistry and research, who will give their attendance in the Laboratory from 8½ o'clock, A.M., till 4 o'clock, P.M., five days in the week." The instruction promised, however, included modern languages and mathematics. The announcement in the other departments was similar. In 1865 Samuel Hooper had endowed the Sturgis-Hooper Professorship of Geology, with the purpose of its becoming the nucleus of a School of Mining and Practical Geology.

The students were listed in the Catalogue without distinction of classes, but with their departments noted after their names. Out of forty-one students in the catalogue of 1868-69 only five had degrees; twenty-four were in the department of engineering or the School of Mining. The School seems to have been at this time loosely organized, uncertain in aims, and running downhill in point of numbers.

Very early in President Eliot's administration plans for its reorganization were discussed by the Faculty of the School and by the Corporation, and a plan for increasing and strengthening the instruction in the department of engineering, for consolidating the chemical laboratories of the School and the College, and for making more effective use of the great advantages for the teaching of natural history, were adopted. A four-years course was provided in civil and topographical engineering, and a professorship of topographical engineering added to the Faculty. With the economy effected by the consolidation of the two chemical laboratories it was possible to turn the Rumford Professorship over to physics, and so to provide for instruction in the subject of light and heat.

Under the reorganization of the school four separate courses were offered: 1. A four-years course in civil and topographical engineering. 2. A three-years course in theoretical and practical chemistry. 3. A one-year course in the elements of natural history, chemistry, and physics, intended especially for teachers or persons who intended to become teachers. 4. Thorough instruction for advanced students in physics, chemistry, zoölogy, geology, botany, and mathematics. For the first course a new degree of Civil Engineer was established. The first three years of the four-years course in the

Mining School were made identical with those of the engineering course. The next year a four-years course in mathematics, physics, and astronomy was added.

At the same time the Lawrence Scientific School and the Mining School were brought more within the University fold by opening the rooms in the College dormitories to their students; and in 1872-73 their students received instruction in French and German in the College classes. The standards of the School were made more definite in 1872-73 by establishing examinations for admission similar to those in the College, except that French or German replaced Greek, and the quantity of Latin was reduced.

In spite of the efforts of the Faculty and the Corporation, however, the School did not thrive. In 1878 the number of students had fallen to seventeen. Unwittingly the great improvements made by the broadening of the elective system and the setting up of regular work for graduates were sapping the sources of supply for students in pure science, and the depression in business had reduced the demand for engineers and industrial chemists. In particular the provision for the degrees of Ph.D. and S.D. to be administered by the Faculty of the College had drawn away most of the advanced students in pure science and mathematics from the Scientific School, and the opening of the College courses to mature special students had drawn off another class of applicants. In 1879-80, of the nine regular students (besides the seven special) five were in the engineering course, three in the four-years course in natural history, and one, the only student of the second year, in the four-years course in mathematics, physics, and astronomy.

In the next few years there was a slight revival in

numbers, chiefly through the effect of lower entrance requirements and of leniency in scrutinizing the qualifications of special students; but by 1886 the number of students had dropped again to fourteen, which proved to be low-water mark in the history of the School. In 1885-86 the President, after pointing out that all the instruction in pure science, and almost all of that necessary for an engineer, was now open to students of the College, formally recommended that the Lawrence Scientific School should be discontinued as a separate organization, the name Lawrence to be given to a building and to one or two professorships, in order to preserve the memory of the sagacious purposes and liberality of Abbott and James Lawrence, and that the degree of Civil Engineer, based on that of A.B. or S.B., should be administered by the Academic Council.

About this time, however, in 1885, a new dean was appointed, under whose energetic management the School escaped this imminent fate of extinction; and beginning in 1887 the numbers of students increased, at first slowly, and then with great rapidity. At the end of the six years in which Professor Chaplin was Dean there were one hundred and eighteen students in the School, though the number of special students still outnumbered the students in the regular courses. Of these courses there were now five: in civil and topographical engineering, in chemistry, in geology, in biology, and in electrical engineering; all were laid out to occupy four years.

The deanship of Professor Shaler, who succeeded Dean Chaplin in 1891, included the years of the greatest prosperity of the School as an undergraduate institution. The reorganization in 1890, by which the College, the Lawrence Scientific School, and the Graduate School

of Arts and Sciences were administered by a single faculty, each with an administrative board of its own, proved highly effective. The Lawrence Scientific School now went ahead rapidly, and in the next four years there were added new four-years courses in anatomy, physiology and physical training, architecture, mechanical engineering, and mining engineering. In 1896-97 the number had risen to over four hundred, with a decreasing proportion of special students; and it was decided in that year to raise the requirements for entrance by five annual increments until they were even with those of the College. The next year the Corporation decided to build for the School the much needed new quarters, out of the great unrestricted bequest of Henry L. Pierce. At the same time a building on Holmes Field, which had been built originally for athletics when the track was on that field and the baseball diamond on Jarvis, was altered over into a laboratory for the courses in mining and metallurgy.

Thus the School went on, constantly increasing in usefulness and numbers. Courses in landscape architecture were added in 1900-01, and in forestry in 1903-04. When Professor Shaler died in 1906 there had been for several years more than five hundred students in the school.

The final stage in the history of the School under President Eliot was reached in 1905-06. Then, with the immediate prospect of the receipt of the first installment of one million dollars from the Gordon McKay bequest, a complete reorganization of the instruction in applied science was effected. The Lawrence Scientific School went out of existence, the degree of Bachelor of Science was established in Harvard College, and a Graduate School of Applied Science was created to

give degrees in engineering, mining and metallurgy, architecture, landscape architecture, forestry, applied chemistry, applied biology, and applied geology, but to holders of a bachelor's degree only. Thus was brought to practical consummation President Eliot's vision of a university in which, on the foundation of a great and strong college of liberal arts, should be built up professional schools which should give training in all the intellectual professions.

The history of the other department which was incorporated with the Graduate School of Applied Science in 1905, the Bussey Institution, is interesting, though checkered. It was organized in 1870-71 from a fund left by Benjamin Bussey, who died in 1842, leaving a large estate to the University after the lapse of certain annuities, a part of it to found a school of horticulture and agriculture. President Eliot defined the aims of the Institution as follows:—

> The single object of the School is to promote and diffuse a thorough knowledge of Agriculture and Horticulture. Young men who propose to be farmers or gardeners, or who expect to have charge of large landed estates or ornamental grounds, whether private or public, will find at this School instruction suited to their needs, and amply illustrated by the rich scientific collections of the University, and by a botanic garden, a large and profitable farm, green-houses, propagating houses, and field experiments.

Francis Parkman (A.B. 1844), the historian, was the first professor of horticulture, and there were two other professors.

The project was ahead of its times, however, and in the second year of its organization President Eliot pointed out that even the regular agricultural colleges

of the country had not yet created a demand for thorough instruction in agriculture. That demand did not really develop for more than twenty years, even in the states of the West where the agricultural colleges are now so strong. The Bussey Institution, therefore, ran a quiet course, carrying on a certain amount of research, and training a small number of students, in part young men who were to earn their living on the farm or as gardeners, in part young men of a more ornamental type, who for one reason or another did not gain admission to Harvard College.

The Bussey Institution was overshadowed by its neighbor, the Arnold Arboretum. In the spring of 1872 the trustees under the will of James Arnold gave $100,000 to establish an arboretum, on condition that the University should grant the land. Accordingly a considerable portion of the great estate at Forest Hills which had been left by Benjamin Bussey to the University was set aside for the purpose; and under the energy and learning of Professor Charles Sprague Sargent (A.B. 1862), who succeeded Francis Parkman as Professor of Horticulture in 1872, and was made the first, and so far the only, Arnold Professor of Arboriculture in 1879, it has become a very important station for the acclimatization and the study of trees and shrubs.

In 1903-04 a more effective use for the Bussey Institution began to develop. By that time it had become clear that the situation of the lands in the suburb of a large city, with city conditions rapidly growing out around them, made the site impracticable for an ordinary agricultural college. The coming of Dr. Theobald Smith to the University in 1894-95, as Professor of Comparative Pathology, made necessary some place where his work could be carried on; and in 1903-04 a special

laboratory was built for him at the Bussey Institution, where under his direction, but at the expense of the State Board of Health, diphtheria anti-toxin was produced for use of the physicians of the State. In the mean time the income of the Bussey Institution, which had been greatly impaired by the Boston fire of 1872, was too small for any development of the work. Accordingly, when graduate work in the Lawrence Scientific School was merged in the Graduate School of Applied Science, it was proposed to use the Bussey Institution as a place for advanced instruction and research in applied biology. In 1907-08 the Corporation voted to discontinue the Bussey Institution as a place of undergraduate instruction. New appointments to its Faculty were made, either by election or by transfer from other departments of the University, and it was transformed at a stroke from an almost supernumerary department to a most productive and profitable institution for advanced instruction and research in " four subjects of applied Science which are of fundamental importance in agriculture, horticulture, and arboriculture, namely, economic entomology, plant breeding, animal breeding, and comparative pathology."[1]

[1] *President's Report,* 1907-08, p. 31.

II

HARVARD COLLEGE

The Faculty of Arts and Sciences. The Elective System. Academic Distinctions. Discipline. Admission. Undergraduate Life. Athletics. Intellectual Avocations. Religion and Philanthropy. Clubs and Societies. Dormitories. Class Organization.

With this brief survey of the history of the University before us, we can now turn to consider it as it is to-day. I shall begin by an account of Harvard College, first describing the academic side and the system of administration and instruction, then the social life and other activities of undergraduates outside their studies; then I shall pass on to the work of the various graduate schools, and to the library and museums and other scientific establishments of the University. It is to be remembered that, though Harvard College makes more impression on the imagination both of graduates and the public, yet the work of the graduate schools and the product of research conducted therein are in themselves sometimes of more lasting importance. The fact, however, that this product is nowadays often technical and recondite, makes it hard to render a just account of it for a general audience.

Harvard College, "the oldest, the most essential, and the most beloved department of Harvard University," as President Eliot once called it, is to-day administered by the Faculty of Arts and Sciences. This Faculty administers also the Graduate School of Arts and Sciences, the Summer School, and the work in University Ex-

Faculty Room

tension. It consists of all teachers in those departments whose appointment is for more than a single year, and it includes four deans: the Dean of the Faculty, the Dean of Harvard College, the Dean of the Graduate School of Arts and Sciences, and the Dean for University Extension. In 1911-12 there were on its lists one hundred and forty-nine professors, associate professors, assistant professors, one lecturer, and twenty-five instructors, making, with a few administrative officers, a total of one hundred and eighty members.

The Faculty meets in the large Faculty Room in University Hall, once the College chapel, and now, with its round-top windows on each side, and portraits of professors and founders of professorships, the handsomest room in the University. Among the portraits are several of distinction as paintings, including the fine Copley portrait of John Winthrop, Hollis Professor of Mathematics and Natural Philosophy from 1738 to 1779, and the portraits of Sir Matthew Holworthy, the benefactor of the eighteenth century, and of his wife, both by Sir Peter Lely. There are also portraits of James Russell Lowell, Henry Wadsworth Longfellow, and a number of other professors. At intervals along the walls there are a number of busts, in marble, bronze, or plaster, of professors and other officers, including a fine marble bust of President Eliot; and there are bronze bas-relief portraits of Professor Francis James Child and Alexander Agassiz.

The members sit at long tables or on settees along the sides of the room. Before the meetings, tea is served in one of the adjoining rooms, and there members can gather for a little talk before the meeting, which not infrequently runs on into the time when business is begun. The Faculty is well provided with silver plate.

It ordinarily uses for these weekly meetings a beautiful set which was presented some years ago to Professor John Knowles Paine, Professor of Music, and was given by his widow to the College for the use of the Faculty.

Much of the routine business which comes before the Faculty has already been prepared for it by the several administrative boards and needs only a formal vote. Other matters, including all general questions of policy, are debated at length. Usually the Faculty has on hand some important question, such as a change in the requirements for admission, or in the rules for the choice of electives, or in the requirements of residence for the degree, which go to the root of education, and in these cases the discussion is long and thorough. For such questions the ground is ordinarily prepared by a committee, which in important matters may take a year or two for discussion before bringing in their report. In so large a body as the Faculty all practicable views, and some that are impracticable, are sure to be presented, and all are considered thoroughly and at length. The educative value of these discussions is great, and they make powerfully for unity in a large body in which, because of its division into departments, there is always some danger that every man may go his own way.

The attendance at Faculty meetings varies considerably with the subject. Some members are assiduous and regular, the faces of others are unknown to the Secretary. On important questions the vote usually includes a very large proportion of the whole Faculty. All votes which involve serious changes of policy must go to the Corporation and Overseers for their assent. This provision for the approval of the governing bodies is by no means perfunctory, for both Corporation and Overseers take a very active interest in the growth of the University, and,

though the cases are infrequent, the Overseers occasionally send back a vote to the Faculty for further consideration.

The ordinary course of promotion in the Faculty is fairly regular. A young man is apt to enter the service as an assistant in one of the larger courses while he is studying in the Graduate School. Here he works under the direction of an experienced teacher, and if he proves his value at this work, he is likely within a few years to be promoted to an instructorship on a regular appointment. Most of these instructors have already taken the Ph.D. If he still, in this new field of probation, shows himself a good teacher and maintains his promise as a scholar, and if the Corporation can be convinced that the department needs a new man and there are funds to support him, the young man is then promoted to the Faculty as an instructor without limit of term. In this position he serves for a varying number of years, usually not more than five, and then if he still seems to be made of good professor stuff, he is appointed assistant professor for five years. Ordinarily he serves two terms of five years as assistant professor before being promoted to his professorship; but in the case of brilliant men the election to the permanent position may come earlier.

The future professor who thus gradually works up from his graduate school is very often a graduate of another college than Harvard. The large staff of assistants in the elementary courses has proved an excellent preventive of inbreeding; for it furnishes a constant supply of men from a great variety of colleges all over the country who can, after this careful and rapid proving, be brought into the Faculty. At the same time the Corporation, from time to time, elects directly to profes-

sorships men who have made their mark elsewhere. As a result, the Faculty has wide range and great diversity of experience. When President Eliot retired, in 1909, of the nine deans in the University five had received their first degrees elsewhere than at Harvard; and in 1911-12, out of one hundred and eighty members of the Faculty of Arts and Sciences there were fifty-eight who either had received their first degrees elsewhere, or had no university degree. This great variety in the origins of its teachers is a marked characteristic of Harvard University to-day.

Within the last few years the position of professors has been greatly improved by the establishment of a pension system. In 1899, six years before the creation of the Carnegie Foundation, Harvard University received an anonymous gift, from the income of which retiring allowances for professors were instituted. Under the rules as originally established by the Corporation at that time, a professor or other officer of like character who had been in service for twenty years could retire at his own will when he reached the age of sixty years, with an allowance ranging from one third to two thirds of his salary at the time of retiring. At the same time, it was provided that the Corporation could on their part retire a professor with an allowance at the age of sixty-six. Under the rules of the Carnegie Foundation, in which Harvard University shares, the age for voluntary retirement is sixty-five, and provision is made for the widows of professors. Through an arrangement with the Trustees of the Carnegie Foundation, the Corporation is able to give to a retiring professor the benefit of whichever set of rules happens to be more favorable to him. The rules for retiring allowances apply also to librarians, assistant

librarians, curators and assistants in scientific establishments, and administrative officers of long tenure.

For purposes of instruction and administration the Faculty is organized into eighteen divisions. Of these divisions several include two or more departments: the Division of Ancient Languages, for example, includes the Departments of Indic Philology and of the Classics, and the Division of Modern Languages the Departments of English, of the Germanic Languages and Literatures, of French and other Romance Languages and Literatures, and of Comparative Literature. Where the departments are distinct from the divisions the functions of the division are usually confined to the direction of graduate work, such as making recommendations for graduate scholarships and fellowships, and conducting the examinations for the higher degrees. So far as Harvard College is concerned, the department is usually the working unit.

The department is necessarily an intimate body, in which discussion is carried on with the greatest freedom and informality. Each year the department must consider what courses it will recommend to the Faculty for the ensuing year, and it must go over its lists of assistants and instructors, and make selections for recommendation to the Corporation. The department also carries on the examinations for degrees with distinction and makes recommendations to the Faculty. With the increase in the numbers of the Faculty and the advance of specialization, the departments and divisions tend to become more important, but there is a strong feeling that the functions of the Faculty as a whole must be preserved in order that growth may be even and proportionate.

The chairmen of the divisions and departments are appointed by a committee consisting of the President and the several deans in the Faculty of Arts and Sciences. The chairmanship is not ordinarily held by one man for more than five or six years, and it is by no means always held by the senior member of the department, for it is primarily a working office. Indeed the chairmen at times are inclined to think of themselves as choremen, they transact such a quantity of small business for the department. The chairman is responsible to the President for the budget of his department; he speaks for the department in all recommendations for appointments, or for the enlargement of the work of the department; he carries on all correspondence relating to that work, especially with applicants for graduate study or scholarships, and, in general, is the executive head of the department. The position carries honor and hard, often trivial, work in about equal proportions. An enterprising chairman may be of extraordinary value to his department, for on him falls ultimately the responsibility for finding the younger men through whom the department of the future will be built up. If his judgment is poor or if he trusts to other men to search out the best, his department may suddenly find itself, through unexpected deaths or resignations, in the position of having no strong young men with whom to fill gaps. The chairman of a department needs not only business capacity, but large foresight for the future.

Since 1887 instruction has been offered by these departments and divisions to students in Harvard College under a free elective system. Between 1887 and 1910 there were no restrictions on the choice of students

except the requirement that all students should learn to write their own language with respectable correctness and fluency, and that they should, either at school or in college, have acquired the rudiments of French and German. Besides these the only limitations of choice lay in the necessary sequence from elementary to advanced courses in the various subjects. In each year a student takes from four to six courses. The requirement for the degree is sixteen courses of elective work plus what English composition is prescribed for the individual student; and these courses may be distributed over three, three and one-half, or four years. As a matter of fact, since the standard of the courses must not be too high for students in the lower quarter of the class, students of average capacity or better can easily manage more than the minimum requirement. In these days, when the professional courses have been lengthened to three years in the Law School and four years in the Medical School, and a degree is required for entrance to them and to the Schools of Applied Science and Business Administration, a considerable number of young men complete their undergraduate work in three years. A somewhat larger number complete it in three and one-half years, and use the half year so gained for travel or for getting started in business. The elasticity of the present arrangement fits well with the great variation in the mental capacity or intellectual development of undergraduates. No set of young men from eighteen to twenty-one years old will ever be evenly grown up, and any rigid system is bound to make the work either too easy for the brighter and more mature or too hard for those who are slow or late in developing.

In 1910 the free elective system was somewhat modified by requiring all undergraduates to use the system

as all sensible undergraduates had always used it. Under rules established in that year the subjects of instruction are divided into four large groups: (1) language, literature, fine arts, and music; (2) natural sciences; (3) history, political, and social science; and (4) philosophy and mathematics. The new rules require each student to take at least six out of the sixteen elective courses required for the degree in some one department or in closely related departments, and to distribute another six courses among the three large groups named above in which his chief work does not lie. Thus each student must get a fairly thorough knowledge of a single subject, and at the same time he must have, at any rate, a bowing acquaintance with the other chief fields of knowledge.

One of the most important of these new rules for the choice of electives is that which requires all students before the end of the Freshman year to choose the subjects which they will study through the latter years of college. To aid them in making this choice, each is assigned to an adviser in the Faculty. At present each adviser has not more than four students from each class, but his relations with those four students continue throughout the college course. Thus the student is fairly sure of interest and advice from a friend who knows him and his needs. Each student must submit his list of studies to his adviser for approval before it is sent to the Committee on Choice of Electives for final acceptance. Where a student wishes sanction for deviations from the rules, he must convince, or try to convince, his adviser of the wisdom of the exception before going to the committee. The advisers, having each so few students to care for, have a sincere interest in their work and give time and thought to the problems

of the individual student. Within a few years, a philosopher, the range and profundity of whose thought have made him known all over the world, made a considerable number of visits to the College Office in order that he might be able to work out intelligently the details of the courses of the four young men to whom he was adviser.

These rules are administered by a committee of the Faculty of which at present the President is chairman. Under the instruction of the Faculty when the rules were adopted, this committee is charged to look on flexibility in the administration of the rules as an essential part of the system. Any student who desires to make a deviation from the rules which will give him a better, rather than a worse, education, is always sure to have his petition granted; and any student who, as he passes on in his course, suddenly wakes up to the interest of a new subject, may make a change in his general choice if that change will not wholly wreck his chances for a systematic education. The aim of the committee, as of the Faculty, is to insure that the rules shall help every student to the best use of his opportunities, and therefore liberal exceptions are made to this end. Where so large a number of students are gathered together, with so great variation in age and previous training, there are inevitably exceptional cases in which rigid rules would work hardship; but a general principle sympathetically applied will dispose of a multitude of exceptions. The rules have been in force only since September, 1911, but so far there is every reason to believe them successful in operation.

As a matter of fact, these rules are merely an application to all students of the practice of the great majority of students in the past. Within the last thirty

years there have been two exhaustive studies of the results of the elective system at Harvard, each of which has proved that the number of students who have abused their privileges under the system has been very small. Moreover, when the new rules were adopted by the Faculty, figures were presented, based on the records of recent preceding classes, which showed that with a very small change in the choice of studies by these classes, the rules would have covered almost all of their members. Contrary to the general opinion, the chief abuse of the elective system has not come from the loafers and seekers for the primrose path, but from students with excessive zeal for study. There were not infrequent cases of students with a passion for the classics, or for chemistry, or for some other single branch of human knowledge, so excessive as to smother their sense of proportion. Such men might go through college working with the best of consciences, and come out at the end ignorant except in their single subject. The injury of an unguarded elective system to such men was indubitable.

As to the other kind, the men who look on college chiefly as an agreeable club with a pleasant athletic tinge, it is doubtful whether they will imbibe more knowledge when they are led up to particular fountains than when they are left to choose for themselves among a larger number. Since education began there have always been young men who have wasted years which might have been made precious; and it is not likely that the wisdom of faculties will ever in this respect re-create the race. At the English universities there are still colleges which are recognized as havens for the ornamental; and in Germany, it is taken as a matter of course that considerable numbers of students shall spend a year or

two drinking beer and decorating their faces with sword slashes before they settle down to the serious work of getting their degrees. In America human nature is much the same as it is in Europe, and so long as many Americans continue to look on three or four years at college as a vested privilege of the sons of the well-to-do, all systems of education, whether prescribed or elective, will be abused by some students. Under a free elective system it is surprising to see how many of these volatile youths quite unintentionally pick up a strong interest in some subject that they would never have known about except for the elective system.

All new courses of instruction must pass the gauntlet, first of the department, and then of the Committee on Instruction, before appearing in the Elective Pamphlet. The Committee on Instruction is one of the most important standing committees of the Faculty. It scrutinizes with great care all proposals for changes or novelties in instruction, and not infrequently refers them back to the departments for further discussion or for explanation. The care and judgment exercised by this committee are the chief safeguards, so far as the Faculty is concerned, for an even growth of the instruction offered, and for a due sense of proportion and of the relations between different subjects. The committee is large, for it must represent all fields of knowledge. It always includes some of the wisest and most experienced members of the Faculty.

The method of instruction in so great a range of subjects of necessity varies greatly with the subjects. In general, however, the type of instruction in Harvard College is by lectures, reinforced by laboratory work or other exercises of similar aim. In the large elemen-

tary courses, in history or literature or economics, for example, lectures usually occupy two out of three meetings a week; and for the third hour the class is divided into small sections of twenty to thirty students under the charge of an assistant. Each student has a certain amount of reading to do, and in most courses some small investigation to undertake, the making of a bibliography perhaps, or the preparation of a report or thesis on some special subject out of material which he must seek in a number of sources. In this way the courses in which the students' work must be chiefly in books give the same sort of training in hunting for facts that the laboratory courses give.

The section meetings of the large courses are a highly important part of the system of instruction, and one which has been greatly developed of recent years. Sometimes the section meeting begins with a short written paper; sometimes, especially in economics and government, the instructor will start a debate on the application of some principle which has been laid down in the lecture, calling upon members of the section to express their views and to work out the application of the principles; sometimes there will be quizzes on prescribed reading; sometimes the assistant will lecture for a part or the whole of the hour on some point of detail. In general, these section meetings are kept flexible and a good deal is left to the discretion and ingenuity of the individual instructor. The main point of his work is that he shall bring home to each individual in his section the meaning and application of the principles laid down by the professor at the head of the course; and it is the business of the "section man," as the students call him, to see that the doctrine of the course sinks in, and to set individuals to thinking. In

most departments the elementary courses are adequately manned with assistants. The added responsibility for the head of the course is considerable. He must not only be a man of learning and an authority in his subject, but he must be a judge of men and a good organizer. If he has the imagination and the foresight to pick out young men who are stimulating teachers, his course becomes a power in stirring students to thought. If, on the other hand, he be contented with smooth routine, his course may become humdrum and ineffective.

At the same time, this system is of the greatest value in training up new men for the Faculty. A graduate student who is brilliant in his subject may or may not be a good teacher. In these large courses, if he has promise, he is given the chance to try himself under instruction and observation; and the head of a large course can very soon tell by comparing grades and noting the written work done in different sections whether an assistant is useful or not. Thus a considerable number of young men are having excellent training as teachers, either to continue at Harvard or to go to other colleges. There is always a keen demand elsewhere for those for whom there is no room at home, and the flourishing Harvard clubs at the seats of so many universities in the West contain many men who have been at one time instructors or assistants at Harvard.

In all the courses, whether elementary or advanced, whether large or small, the lectures of the professor are reinforced, as has been said, by laboratory work or by numerous written reports and theses, based on the study of sources. The example of that great teacher, the elder Agassiz, has now spread to the teaching of the humanities, and to-day there is very little bare com-

munication of facts to students by lectures or text-books. From the beginning, each student is expected to hunt for facts for himself. In the elementary courses, a large part of the work of the instructors consists in teaching students to read—to recognize the facts which are on the pages before them and to see their significance. They are also shown how to find sources and how to make a bibliography. The method is closely akin to that in chemistry and in biology, where the student is given the apparatus and material and then set to investigate for himself and to note down the facts which he has observed.

As students go on from the elementary to the advanced courses, they are expected to work more and more for themselves, so that by the Senior year most students are doing something which is of the general nature of original research; it is unusual that an undergraduate gets into a field which has not been explored before, but so far as the students themselves are concerned, they are working on virgin ground where they must find their needs for themselves. The result for the professors is sometimes a back-breaking burden of manuscript at the end of the year, but for the student who has worked out a little field for himself with only general guidance from his professor, the experience is education of a most effective kind.

The number of courses open to Freshmen is limited, for Freshmen must start at the beginning in various subjects. In the year 1911-12 there were fifty-eight courses in all open to Freshmen (making no distinction between half-courses and full courses). The number of these was larger than it would otherwise have been, owing to the necessity of having separate courses for the Freshmen who have passed the elementary or ad-

vanced examinations in the languages and mathematics. The largest of the courses at present is the course in English composition which is prescribed for all Freshmen excepting a few who have passed an anticipatory examination. Besides this there is the large course in the beginnings of German which is prescribed for all Freshmen who did not take the entrance examination in German. Of the elective courses which are usually taken by Freshmen, the largest is that in government, which had in 1910-11 three hundred and sixty-eight students, of whom two hundred and fifty were Freshmen. Almost equal in size to this is the elementary course in history, which had two hundred and twenty-eight Freshmen. After these, the courses most largely elected by Freshmen are the elementary courses in the philosophy of the Greeks and Romans, and in psychology, in experimental physics, and in descriptive and inorganic chemistry. Next to these in the preferences of the Freshmen come the elementary courses in French, in modern philosophy, and in botany, zoölogy, and geology. In these elementary courses, the majority of the students are Freshmen, though all of them have a fair number of Sophomores and a sprinkling of Juniors and even Seniors, for they are not only elementary but are also the general courses, and are therefore valuable for students who wish for a general acquaintance with a subject.

The courses offered by the Faculty of Arts and Sciences are divided horizontally into three groups, designated respectively as "primarily for undergraduates," "for undergraduates and graduates," and "primarily for graduates." There is no very sharp line between the groups, and undergraduates who can prove their fitness are freely admitted into the courses primarily for graduates. At the same time, a course in the middle group

may have a considerable number, perhaps a majority, of graduate students. The advantage to the courses of this mingling of older students with younger is considerable. It is unquestionable that a course tends to follow the pace of its better students, and it is also unquestionable that an undergraduate, being human, can do many things, of which he was supposed to be congenitally incapable, just as soon as they are required of him. Accordingly, if a course has a good sprinkling of mature students, the instructor in charge of it can cover more ground and can cover it more thoroughly than if the standard of the course were set wholly by younger students.

In the middle group the courses vary greatly in number of students according to the subject. Wherever the numbers go beyond forty or fifty, it is usual for the instructor in charge to have an assistant to aid him with written work or in the laboratories. To take two fundamental subjects for examples: in history, which is at present one of the popular subjects with undergraduates, the elementary course had in 1910-11, as we have seen, two hundred and seventy-three students, of whom two hundred and twenty-eight were Freshmen. The second-year course had in the first half year one hundred and twenty-four students, of whom seventy-seven were Sophomores and twenty-five Juniors. Among the courses of the middle group in history in the same year, there were nine courses which had less than twenty students each, four which had between twenty and fifty, and seven which had over fifty. In chemistry in the same year, the elementary course in descriptive inorganic chemistry had two hundred and sixty-two students, of whom one hundred and seventy-two were Freshmen. In the courses for undergraduates and graduates there were two courses with less than twenty

students, four with from twenty to fifty, and one with sixty-two. These are both important departments, which draw neither the largest nor the smallest numbers, but are well up in the numbers of students; and they are therefore fair samples of the way in which students divide as they go on through college. It will be seen, that every student gets into smaller courses by the time he is halfway through his college course; and every student who has any intellectual interest is sure to get into some small course of ten or fifteen men, where he will be on fairly intimate terms both with the other students and with the professor in charge.

The course in Harvard College regularly leads to the degree of A.B., or, in case of a student who entered without Latin, to the degree of S.B. The distinction between the two degrees has so far faded out that the candidates for one and the other are no longer differentiated in the catalogue except by the letter A. or S. after their names. The degree, as has been said, is based on passing in sixteen courses of elective work, plus whatever English may be prescribed for a student. This prescription varies according to the endowments with which the gods have blessed him. If he has had an excellent school training and has a natural aptitude for writing, he may pass an examination at entrance which will relieve him of all instruction in English composition in college. Most Freshmen, however, have a year in the large course known as English A. Here they are divided into sections of about thirty, and have thorough drill in the rudiments of English style and at the same time much practice in the larger principles of composition, so that they learn how to construct an essay of considerable length and have some practice in writ-

ing stories and discussions. Those to whom the gods have not been kind may need a second year of this course, or a half year of another course which is especially arranged for men who have not yet gained the easy command of their language, which, it is assumed, so rarely with reason, is one of the nature-given marks of a gentleman and a scholar.

In all the courses necessary for the degree, the statutes of the University require that there shall be mid-year and final examinations. These examinations, which occupy three hours, cover the ground of the course with a good deal of thoroughness. They are reinforced by sets of examinations halfway through each half year, known as the " hour " examinations, short tests which take the place of a lecture or recitation. Besides these, almost all courses have some means of checking the weekly progress of the student and his assiduity in doing the writing or the investigation which the professor thinks it good for him to do. These may take the form of short tests, perhaps ten or fifteen minutes long, once a week, or of quizzes in which the instructor in charge calls on the members of the class at random to render some account of their understanding and interest in the subject. In the laboratories certain hours are designated in which the students must carry on the investigations assigned. In the more advanced courses, especially in history, economics, and literature, theses are required, which in the higher courses may embody the results of considerable investigations. In many of the better organized courses, preparation for the thesis is made by a bibliography or other preliminary studies. Where the students in a course are mainly Seniors and graduates, the instructor leaves them largely to their own resources.

Merely to pass seventeen and one-half courses, how-

ever, does not give a man the degree. He must do something more than barely scratch through. There is a marking system based on five grades, A, B, C, D, and E, of which E means failure and D a bare escape from failure. At the other end, A is the recognition of brilliant work, B of thorough and distinguished, though not necessarily brilliant, achievement. To get his degree, a student must have obtained a grade above D in at least two thirds of his work. Moreover, to be promoted from class to class, he must have attained the same standard. The temper of the Faculty seems to point in the future rather to a raising than a lowering of this minimum requirement.

For graduation with distinction, there are three grades: with distinction, or, in the old Latin terms, "cum laude"; with high distinction, "magna cum laude"; with highest distinction, "summa cum laude." These distinctions may be attained either on all-round excellence, or on special subjects for each of whieh definitions are laid out in the College Catalogue. The purpose of these degrees with distinction is to encourage men to carry their studies far enough in some one subject, and to learn that subject with such thoroughness, that when they graduate they can feel that they really know it. The award of the highest distinction, "summa cum laude," is rightly considered a judgment of brilliant scholarship.

The scholarships reserved for undergraduates are divided into three groups. To win a scholarship in the First Group, of which thirty or forty are usually awarded each year, a man must have a very high record: in technical language, A in more than three quarters of his work. In this group about one third of the number

are John Harvard scholarships, which have no stipend, but are given to men whose standing ranks them with those who obtain the highest money scholarships. The Second Group is made up of men whose record is high, but not so distinguished as those of the men in the First Group. The honorary scholarships in this group are known as Harvard College scholarships, and usually make up about fifty per cent of the group. Since the number of men who are working their way through Harvard College, and supporting themselves in whole or in part, is large, the competition for the money scholarships is very keen, and it is a satisfactory fact that the winners of honorary scholarships keep pace with them so well.

Various experiments have been made towards the more general recognition of scholarship, but none of them has as yet proved very successful. One weakness of the elective system is that it largely destroys the competitive motive which is so valuable as a force in stimulating young human beings to do their best work. Where men are studying all kinds of subjects, in which the standards necessarily differ, competition is inevitably weak. So far the Faculty and governing boards have not found any effective way of making the community, whether in the College or outside of it, take keen delight in honoring high scholars.

There are a considerable number of prizes open to undergraduates. The most ancient foundation is that of the *Deturs,* which goes back to Edward Hopkins, a successful London merchant, who came to New England in 1637 and was several times Governor of Connecticut Colony. In his will he left various educational bequests to New England institutions, and in 1718, the Corporation, after a suit in Chancery, received from the estate

four hundred pounds sterling. This sum they invested in a tract of land from which the town of Hopkinton was formed. This land has since been turned into money, and the portion of it which is assigned to the prizes amounts to over $2000. The income of this fund is used for the purchase of books called *Deturs,* from the first word of the Latin inscription on the book-plates. They are given to men who attain a place in the first group of scholars, on their first appearance in that group. Usually thirty or thirty-five of them are given each year, the larger number to Sophomores and Juniors, on the work of the year before, though there are always some men who first attain their high rank in the more advanced courses.

Next in point of antiquity to the *Deturs* are the Bowdoin Prizes, established by James Bowdoin, A.B. 1745, who was president of the convention which framed the Constitution of the Commonwealth in 1779-80, and Governor of Massachusetts from 1785 to 1787. He bequeathed four hundred pounds to " the University at Cambridge " to be " annually applied in the way of premiums for the advancement of useful and polite literature among the residents, as well graduates as undergraduates of the University." In 1901 his grandson added $15,000 to the principal of Governor Bowdoin's bequest. From this foundation five prizes are offered to undergraduates and four prizes to graduates. For undergraduates one prize of $250 and two second prizes of $100 are offered annually for essays in English, and two prizes of $50 each for translations into Greek and Latin.

In 1817, Ward Nicholas Boylston, of Boston, founded the Boylston Prizes for Elocution, which, by the terms of the foundation, are limited to a competition in speak-

ing selections from English, Greek, or Latin authors. Competitors are forbidden to speak their own compositions. With the change in times, the interest in these prizes and the estimation in which they are held has considerably diminished.

Besides these prizes, the Dante Society offers an annual prize of $100 for an essay on a subject drawn from the life or works of Dante. The Sargent Prize of $100 is offered for the best metrical translation of a lyric poem from Horace. The George B. Sohier Prize of $250 is offered for the best thesis presented by a successful candidate for Honors in English or in Modern Literature. In economics, the Sumner Prize, established by Charles Sumner of the Class of 1830, United States Senator from Massachusetts from 1851 to 1874, is offered for the best dissertation on a subject connected with the topic of Universal Peace. The Ricardo Prize Scholarship, with an annual income of $350, is offered to a student in economics and political science, based on an essay written in an examination on some topic from a list in those subjects. The Francis Boott Prize, founded by Francis Boott of the class of 1831, offers an annual prize of $100 for the best composition in concerted vocal music. The Lloyd McKim Garrison Prize of $100 and a silver medal, established by the class of 1888 in memory of a classmate, is offered for the best poem on a subject annually to be chosen by a committee of the Department of English.

These are the principal prizes offered for the endeavor of undergraduates. The competition for them is not so general as it might be, though that for the Bowdoin prizes has been stimulated by allowing students to offer theses written on the regular work of courses, and by the rule that the committee shall give honorable

mention to all essays which are worthy of counting towards the degree with distinction.

In general, it is not to be denied that academic distinction at Harvard is not so widely desired as it should be. In this respect American colleges differ largely from the English universities, where the names and winners of important prizes are known and recognized through the country. For one thing we have in America too many colleges and the country is too big. In England, which is practically a single parish, local news is national news. In this country, Missouri or California knows little and cares less about distinctions won at universities a thousand or three thousand miles away.

The discipline and the details of administration of Harvard College are in the hands of the Dean and the Administrative Board of the College. The Administrative Board at present consists of six members besides the Dean. This small body, which meets usually once a week, deals with a multitude of matters. In a college of two thousand two hundred undergraduates, the number of special cases due to causes which vary from serious illness or family necessities to irregularity in preparation, is almost infinite, and each of these cases must have a decision of its own. Moreover, in so large a body of youth, there is bound to be much effervescence, most of it innocent, and this effervescence leads to various pranks and irregularities.

The Dean is in direct charge of the College, and his burden is heavy. As a former Dean once said, "Here are two thousand students, to any one of whom anything may happen at any hour of the day or night, and I am responsible." The relation of the Dean to the students is almost parental. Many of them come to

know him through no volition of their own; but on the other hand, it is now the custom for undergraduates to go to him of their own accord, for advice or counsel on their own difficulties or problems, or even to talk over the cases of friends who are not doing as well as they ought to. The Dean is expected to, and in practice does, follow the individual fortunes of all the men who come to his notice, voluntarily or involuntarily. He keeps a close watch on the needy, and he usually has funds put into his hands by graduates with which he can help men along who have not enough money to support themselves properly. Many cases of hardship which come to his notice and to no one else's he thus quietly relieves. At the same time, it is his duty to see that the "birds of paradise" are not flitting through the air all the time. He must see that they do a reasonable amount of work, that they are regular in their attendance at lectures and recitations, and that their grades are, at any rate, respectable. Besides this, the Dean has many talks, often of the most intimate sort, with parents; and he carries on an endless amount of correspondence with parents and with teachers. The variety of duties which fall to him is almost bewildering.

For most of the business of the College Office precedents are now well established. The Administrative Board has certain standing votes: for example, a student whose grades fall below a certain point goes automatically on probation. When he raises them again above the danger point, he is automatically relieved of probation. In these cases the Dean merely reports to the Board. Also there is an established practice about leave of absence and about making up conditions. A large part of the necessary business, therefore, now takes care

of itself without being carried to the Administrative Board. All cases, however, which are exceptional and for which there is no precedent, are carefully discussed by the Dean and then usually referred by him to the Board. There is almost no chance under this system for injustice to individuals.

The bookkeeping is a heavy burden. Under a vote of the Overseers about twenty-five years ago, the Faculty is required to keep account of the attendance of all students at all lectures and recitations. To carry out this vote, an elaborate system has been developed of monitors in recitations who check off the absentees. These lists are then returned to the office, where a considerable staff of clerks enters the absences on large day-books. The College Office is in charge of the Recorder, who is responsible for the records and to whom is assigned the duty of superintending the application of the rules for residence. He also is in general charge of the examinations and of the return of grades by professors. To him are allotted also a multitude of other lesser tasks.

The Dean has the aid of an Assistant Dean, to whom at present is assigned the special charge of the Freshman class. Freshmen naturally need more attention than do upper-class men, for they have not yet become used to the customs of the place or to the new modes of work. It is the duty of the Assistant Dean to follow them closely and to see that they all keep up with their work, to comfort the perplexed, and to encourage the lame ducks. Many a Freshman has thus been pulled through a pretty unpromising year by the faith of an older man, reinforced by the knowledge that a Freshman is at the time of life when he frequently needs time and

encouragement to find himself. The Assistant Dean is expected to pass on to the Dean a class well housebroken, and with most of those who have no fitness for college work weeded out.

The actual discipline of Harvard College is a surprisingly simple matter, when one considers that there are some two thousand two hundred students to deal with, that the doors are open to all applicants of sufficient intellectual ability, and that there is a Freshman class of about six hundred, made up of boys just loosed from the control of home or boarding-school. The tone of college life, even as compared with a generation ago, is now mature, and the undergraduate takes himself as a responsible person.

Such has not always been the case. In the beginning discipline was adapted to a body of boys, and was not infrequently applied in strict literalness to their bodies. The earliest record concerning discipline is a vote of October 21, 1656, which reads as follows:—

It is hereby ordered that the President and Fellows of Harvard College, for the time being, or the major part of them, are hereby empowered, according to their best discretion, to punish all misdemeanors of the youth in their society, either by fine, or whipping in the Hall openly, as the nature of the offence shall require, not exceeding ten shillings or ten stripes for one offence; and this law to continue in force until this Court or the Overseers of the College provide some other order to punish such offences. The magistrates have past this with reference to the consent of their brethren, the deputies, thereto.

Voted in the affirmative 21st of October, 1656.

EDWARD RAWSON, Secretary.

Consented to by the Deputies.

WILLIAM TORREY.

In the seventeenth century the "tutors chastised at discretion."[1] In cases of grave offenses, such as "speaking blasphemous words," the culprit was publicly whipped before the Corporation and the Overseers and all the students. The execution of the sentence was ceremonious: the judgment was twice read publicly in the Library, in the presence of all the scholars, the government, and such of the Overseers as chose to attend; the offender kneeled, the President prayed, and after the corporal punishment had been inflicted, the President prayed again. Corporal punishment in some light form seems to have lasted well down into the eighteenth century. The case of William Vassall against Daniel Rogers, a tutor of the College, in 1733, showed that flogging was still at any rate not illegal; and in 1734 the right of punishing undergraduates by "boxing" was expressly reserved in the revision of the College laws to the President, professors, and tutors. It was twenty years later before the Overseers were ready to let this punishment of "boxing" disappear.

The system of fines for minor offenses, which began as early as 1656, lasted well down to the Revolution. Then it dawned on the authorities that a fine frequently had little effect on the student, but might be a considerable annoyance to his parents. There is a curious list extant of "pecuniary mulcts," dating from the middle of the eighteenth century. Absence from prayers cost two pence; absence from a professor's public lecture, four pence. The profanation of the Lord's Day was more serious, and for that the fine might go up to three shillings. Going to meeting before bell-ringing seems not to have been considered a sign of piety, for it was fined six pence. Undergraduates who went out of town

[1] Quincy, *History of Harvard University*, vol. i, p. 189.

without leave might be fined two shillings and six pence. Hospitality in the form of lodging strangers without leave might be fined one shilling and six pence, and the same fine was levied for entertaining " persons of ill character," or for frequenting taverns. For playing cards, graduates might be fined five shillings; undergraduates, two shilling and six pence. For lying, the fine was not to exceed one shilling and six pence—the same as the penalty for drunkenness, or for keeping prohibited liquors. For " going upon the top of the college," or for " cutting off the lead," or for " tumultuous noises," or for " keeping guns and going on skating," the fine was one shilling. For firing guns and pistols in the College Yard, the fine was two shillings and six pence, and for " fighting or hurting any person," not exceeding one shilling and six pence.

In 1761 these questions of discipline had so disturbed the minds of the Overseers that a committee, which included Lieutenant-Governor Hutchinson, Secretary Oliver, Dr. Chauncy, and Dr. Mayhew, was appointed to consider more effective methods of punishment, and the plan which they brought in has left its traces down to the present day. It provided for warning, and for private and public admonition, the latter with a notification to parents. Nevertheless, the system of fines, though in a modified form, lasted until the reforms of 1825.

After that time the system of demerits was gradually developed, which amounted to fines in what might be called " academic currency "; that is to say, a student who was absent from prayers or recitation, or who otherwise neglected his academic duties, lost a certain number of the marks with which he had been credited for doing the work in his courses. This system so flourished that an undergraduate knew exactly how many more cuts he

had the right to take before being summoned for a private or public admonition. The " College Bible," as the regulations came to be called, waxed large by small accretions, until finally, soon after 1870, it was swept away under the wise counsels of Dean Gurney.

To-day, although from the point of view of the Dean discipline is a heavy burden, it is so chiefly because there is so much petty carelessness inherent in the nature of youth, and the offenders are too old to be spanked. By far the greater proportion of cases which come before the Dean and the Administrative Board for discipline are due to irregularity in attendance at lectures and to low marks. Occasionally a graver case arises to give real anxiety to the Dean. Each year there are a few cases of cheating in written work or in examinations—the larger proportion of them, however, due rather to stupidity and haste than to *dishonesty*—and more rarely a case of riot or of serious moral offense.

All cases, whether trivial or serious, are dealt with most carefully. Every chance is given to the culprit to exonerate himself, and the Dean, even when his own mind is made up, not infrequently spends hours with a student and his parents or his friends. The graver cases are reported to the Administrative Board, which votes probation, suspension, dismission, or expulsion, as the case demands. Of these punishments probation, which is much the most common, varies too greatly in its effect on the individual to be very satisfactory. Technically, it serves notice on a student that he is in grave danger of being separated from the University; and the danger is a real one, for probation may be closed by a simple vote of the Administrative Board. Suspension defeats its own purpose in these days where

so much of a student's work must be done in laboratories or in the Library; for if he be sent away from Cambridge for two or three months, his year's work is hopelessly dislocated. Accordingly, suspension is now rare. Before the erection of laboratories and the elective system, a student used to be "rusticated"; that is, he was sent off to study under some good country minister, where life would be quiet and hours regular.

Dismission and expulsion are the two punishments for serious moral offenses. Both are imposed only by the Faculty. Dismission sends a student away from the University, but leaves the way open to repentance, and he may be readmitted by vote of the Faculty. Dismission, moreover, does not keep a student from being admitted to another institution. Expulsion, on the other hand, is final separation from the University, and practically prevents the offender from being admitted to any other college. It is applied only in cases involving personal moral disgrace, and in the rare cases in which it is necessary to apply it the vote is taken gravely and solemnly by the whole Faculty. In practice few graduates or undergraduates ever recognize any distinction between these latter punishments.

For the lighter offenses, the real embarrassment of the situation is that there is no punishment which is trivial enough and at the same time so irritating to the offender as to be a proper return for the inconvenience to which he puts the College authorities. For neglecting work, probation is in a good many cases effective. For one thing, it involves correspondence with fathers or guardians and also, under the rules, no student who is on probation may take part in any public athletic contest, or in any public musical or dramatic entertainment. Naturally, it bears harder on athletes than on

anyone else, and it has been a wholesome stimulus to the youth to whom athletics are the most important part of the University. There has been and is still some attempt to create the feeling that to keep off probation is for an athlete as much a point of honor as to keep in training. But though the spirit is good, the flesh is weak, and an athlete who loses his place on a team by being put on probation is by no means so harshly considered as the athlete who breaks training. In America, and in other countries, university life includes a considerable number of undergraduates and of graduates to whom the intellectual life is halfway between a bore and a joke. The fact that such men frequently turn out well in life and settle down to hard and intelligent work is not much comfort to the Faculty, who have to spend their time urging capable young men to take their share in the purpose for which the University was founded.

In all the discipline the Dean is the leading figure. Before a student is put on probation for loafing or for low marks, he is pretty sure to have more than one audience with the Dean, and the latter has probably some correspondence with his parents. Among two thousand two hundred young men between the ages of eighteen and twenty-two or twenty-three, there are so many permutations and combinations of shiftlessness, dullness, and immaturity, that it is never safe to apply rigid rules. The Dean must be human and he must be patient; for the tone of the College largely depends on the confidence which it feels in him. This confidence he must win in the face of misunderstanding by the stupid, of irritated vanity on the part of the brilliant lazy youth, and of the disappointment of those fathers who shift all responsibility for their sons to the shoulders

of the College. Dean Briggs's essay on "Fathers, Mothers, and Freshmen"[1] is illuminating on the difficulties which the Dean has to meet.

Nevertheless, the great body of undergraduates at Harvard, as at other American colleges, is sound morally and physically. Indeed it would be impossible to gather together a like number of selected American youth and not thereby create reasons for optimism. The Dean's labors are constantly rewarded by seeing a man who as a Freshman seemed inevitably started on the road to perdition pull himself together, and as a Junior or Senior earn the respect of the Office and of his fellow students. In the work of steadying the restive and helping the half-grown to grow up, the Dean is often greatly aided by the students themselves. It is now a part of the recognized order of college life that the more responsible among the students shall be called on by the Office to help with the less responsible. The presidents of the classes take their office seriously and feel real responsibility; and a good class president is a tower of strength to the Dean.

Besides the offenses which try the patience of the Dean, in the way of cutting lectures and recitations, returning from vacations late, or going away for them early, there are various forms of noise and small disorder which result from the perennial bubbling over of the spirits of youth. For order in the College buildings the proctors are responsible, each for his own entry or building. A proctor who is cool, and has a sense of humor, and can sit through a short period of noise, can soon reduce a dormitory notorious for turmoil to a house of peace. Undergraduates respond to a call on their sense of responsibility, and if a proctor will take

[1] In *School, College, and Character.* Boston, 1901.

the time to know the men in his entry, and will take an interest in their affairs, he can soon have them behaving like lambs. Woe to the proctor, however, who comes rushing out of his room at the first loud noise. There are many games by which such a proctor may be kept exercised, and undergraduate ingenuity is always at its best in devising such games. In one of the College dormitories, for example, which was built with entries running the length of the building and staircases about one-third of the way from each end, a young proctor was so skillfully managed by the undergraduates that every evening they had a series of races along the entries and up the stairs and around again.

On the whole, however, proctors to-day contribute much less to the hilarity of undergraduates than in old times. Cannon-crackers no longer bring them rushing into the yard, nor is there much fun in screwing a man into his room when you like to have him drop into yours. The tone of the College life is older than it was a generation ago, and the diaries kept before the Civil War, which tell of the whole College dancing at midnight round the Rebellion Tree, have a strange and far-away sound. The gradual raising of the age of entrance, and the responsibility imposed on students by the elective system, have matured undergraduate life, and the maturity has destroyed much of the picturesqueness which is so dear to the heart of the reminiscent graduate.

Admission to Harvard College is by examinations. The only exception is in the case of students who have, in part or in whole, completed their studies at other colleges. Such men are admitted to advanced standing, either immediately, when they come from colleges whose

courses are known through former students, or, in the cases of men from colleges of which little is known, after a year of probation as unclassified students. The number of these men is small, however, and the entrance examinations have been and still are considered of vital importance for maintaining the standards of the college. In the recent past these examinations have had an enormous influence for good on the standards of the secondary schools throughout the United States, for thirty years ago, under President Eliot's leadership, the definitions of the various subjects were taken as an ideal for good high-school courses, at a time when there was still chaos in the schools of this country. The purpose of the examinations, however, is to maintain the standards of Harvard College and to ensure that students who are admitted to it shall have had such training as to be capable of entering at once on college work of a high order. One of the chief differences between a strong endowed university and a state university is that, whereas the latter must open its doors freely to graduates of the public high schools of the state, and must do so with the definite intention of finding a place for the largest possible number of them, the endowed university can do its best service to the country only by seeking out and admitting the youth who are intellectually the most fit. The examinations of Harvard College, therefore, are administered with the purpose of keeping only the candidates who have shown distinct intellectual capacity.

The level above which the examinations cannot be raised is set by the possibilities of education which are open to boys in good public high schools. No college which aims to be of value to the country at large can allow itself to drift into a position where entrance to it

can be had only through special preparatory schools. It must be open always to boys prepared in good high schools, where the larger number of pupils do not go to college at all. Harvard College recently faced the situation that its examination system tended to tie it up to special preparatory schools. It has met the difficulty by a new plan of admission, adopted in 1910; and at present there are two plans, standing side by side.

The older plan, which has had a continuous development of forty years and more, was molded, not only with the idea of providing a strainer for entrance to the College, but also, as has been said, with the definite purpose of helping the better teachers in the high schools to raise the standard of work in their schools. Various successive committees of the Faculty, which have prepared and modified the definitions for admission under this old plan, have always had in mind that they must so define the requirements in the different subjects as to make them contain a reasonable statement of what good teaching in a subject might be expected to accomplish in a given number of years. The standard of admission to Harvard College was gradually raised in the course of time, both by adding to the number of subjects required for examination and by increasing the amount covered by them. This raising of the standard went on until the schools began to rebel against the multiplication of subjects and against the specification in detail of what must be taught in each subject.

The old plan requires examinations in six or eight different subjects, to each of which is assigned a fixed number of units. These subjects are English, Latin, at least one modern language, algebra, plane geometry, history, and a science. To make up the complete number of sixteen units required for entrance, boys are re-

quired also to offer advanced work in at least two subjects. A boy who passes all of his sixteen units is regularly admitted, but one who has failed in two or three examinations may still be admitted with conditions, which he must later make up. The examinations may be divided over as many years as the boy and his teachers choose. The result has been that the examinations have come to be a kind of obstacle race, with so many difficulties over or through which teachers must aid a boy to scramble. As a natural result, the special preparatory schools and tutors have attained great skill in guessing at the examinations and in filling boys' minds with just the sort and amount of knowledge which is needed to pass them. It is surprising, sometimes, to see how little education and real knowledge a boy may have who has been prepared by a skillful crammer.

Naturally, the public high schools have taken no part in this very special kind of preparation for Harvard College. Of recent years the good public schools have gone their own way, giving all their pupils as good an education as they could. As a result, in many high schools, if a boy wanted to prepare himself for the special examinations of Harvard College, he had to do part of the work outside of school. Recognizing these facts, the Faculty in 1910 prepared what is known as the New Plan of Admission. This frankly recognizes the very great advance made by the public high schools of the country within the last generation, and also the fact that since ninety per cent of the pupils in these schools do not go to college, the teachers in them must think first of the interests of the ninety per cent. Furthermore, it was recognized that a public high school in Iowa, Missouri, or Montana, knows very little about Harvard or any other single college in the East. Accordingly, the

Faculty adapted the new plan of admission to the capacities of any intelligent boy who has had four years of a good high-school course.

The system is extremely simple. It requires the candidate for admission in the first place to show that he is ready to take the examinations by sending a statement of the subjects which he has studied in his high-school course, with the time given to each subject, and his standing in his high-school work. If this is found satisfactory by the Committee on Admission, the candidate is then admitted to the examinations. These are four in number, of three hours each, and on subjects which are certain to be taught by any good high school. The subjects in which the boy is examined are (1) English, (2) Latin (or for candidates for the degree of S.B., French or German), (3) mathematics, physics, or chemistry, (4) any subject not already selected from the following list: Greek, French, German, history, mathematics, physics, chemistry. The examiners who read the books are directed to return not merely a grade but a statement of the quality of the examination book and its bearing on the fitness of the candidate to study in Harvard College.

This plan has been in operation only a short time, but it has already proved to have opened the doors of the College to a great number of high schools widely scattered throughout the country. Furthermore, the record of the first set of men admitted under the new plan was so far above the average of their classmates who were admitted under the old plan, that it seems probable that it is also serving the purpose of bringing to the College a picked set of young men. In 1912-13 Princeton, and then Yale, adopted similar systems.

The age of entrance has been for a number of years about eighteen and a half, with inconsiderable variations

one way or the other from year to year. The average age is raised by the number of men in each entering class who, having to work their way through college, have stayed out a year or two in order to earn money. Frequently, these men become leaders among their classmates, and they are always a leavening influence for seriousness and stability in college life. There is little probability that the average age will increase, for with the lengthened course in the professional schools and the increased number of directions in which professional training is provided, the age of entering on the work of life is now greatly postponed. A young man who intends to be a doctor, if he gets through college at twenty-two, does not finish his course at the Medical School till he is twenty-six, and then, if he is to have the best training, he has a year or two of hospital work. Therefore, the age of entrance to college is a grave matter.

What young men get from any proper college, however, is far from being exhausted by what they get from their studies and from the Faculty. An invaluable feature of college life is the opportunity to meet men of all sorts of origins, and the necessity of mingling with them freely on even terms. The colleges of America are the mingling-pot of the nation in a sense which is probably true to the same extent of no other country; for with us literally all sorts and conditions of youth go to college, from the sons of families of wealth and ancient standing to the sons of farmers and day-laborers or of the oppressed Jew who has escaped from Russia or Poland. Not only are the doors of our colleges open to everybody, but the system of public schools encourages all kinds of young men to throng to these open doors.

When, as in Harvard College, two thousand two hundred young men are thus brought together, the community which results is bound to be interesting.

Every college in the country which has any strong individuality has that individuality determined by some one strong note. At Harvard that note is the liberty of the individual. There is no compulsion in the social system of the College. The clubs and societies are recognized to be private associations, and as such make no effort to influence the management of athletics or of class elections. All men are free to find, not only their own level, but also their own kind. Congeniality and human interest are the only conditions of association among undergraduates at Harvard.

Within the last generation, during which the number of students has more than doubled, undergraduate life has of necessity greatly changed in its organization. While the classes still ran below two hundred, it was in some degree possible for all members of a class to know one another, or at any rate to know about one another. Under such conditions class and college organization was simple and informal; certain clubs usually contained the leading members of the class; and the classes looked naturally to these men for guidance. Occasionally, when strong leaders were not members of these clubs, there would be grumbling and perhaps rebellion, as in the case of a class in the middle seventies in which dissension ran so high that it was impossible to elect officers for Class Day. Sometimes this unformulated aristocracy, which was a relic of older New England and reached back to the days when, as Governor, John Winthrop could speak publicly of the "baser sort," presumed on its powers and its importance. On the whole, however, down to the middle of the eighties, what was once called

" the apostolic succession " managed the undergraduate life of Harvard College satisfactorily.

Even in those days outsiders of force had their chance, and there were always, in the clubs which formed the apex of the college pyramid, men who had come to college as strangers. An aristocracy does not gear well with a democracy, however, and when the democracy begins to grow in numbers it inevitably produces more available leaders. Moreover, it is a general phenomenon in American colleges that a system of undergraduate societies which provides adequate organization for the days of small numbers, breaks down when the numbers grow. Then if the old small-college system clings to its powers and privileges there follows a time of trouble and distress. When a large body is trying to burst open its carapace and this does not crack, something must explode. Fortunately for Harvard, the old small-college system gave way comparatively easily.

An outward symptom of the change may be traced in the matter of success and failure in athletics. From about the middle of the eighties, when the classes began regularly to exceed two hundred and to increase rapidly, the athletic prowess of Harvard suddenly collapsed and the University teams and crews became almost a byword. Then, for about fifteen years, there was a time of chaos and distress. The budding democracy, which was taking the place of the older traditional aristocracy, had not yet found itself, and with the best of intentions the undergraduates did not know how to work together. By insensible degrees, towards the latter part of the nineties, the new system crystallized. Class elections were purged of club interests, and captains and managers of the crews and teams were chosen for their force as leaders and for executive capacity. The class officers

were expected to serve the class as a whole and to justify their election by hard work, and not to look upon it as a compliment to their own acquired or inherited positions. At the same time, efforts which were increasingly successful were made to bring all the elements of the classes together on even terms. It is obvious that as the classes ran up to five hundred and six hundred in number, intelligence and effort were necessary to bring about this most desirable end. In the last few years it seems to have been attained. Equality of opportunity in athletics and in the general life of the College is now taken as a matter of course. At the same time, as the old clubs and societies did not enlarge their numbers, new ones sprang up beside them. Thus each small club or society became a smaller factor in the life of the whole class.

With this change came the feeling that liberty, in order to produce democracy, must add to itself not only equality of opportunity but also fraternity, and for the last fifteen or twenty years the best men in the classes have felt their responsibility for bringing the whole class together on even and cordial terms. The class organizations are now working organizations. The presidency of a class carries a burden of responsibility which sometimes interferes with college work. The president is expected to keep track of the activities of the class and to know more or less about what is going on in it. He appoints committees to organize class-smokers and class-dinners, and he consults with the officers of other classes and of the College concerning the welfare of the College.

The feeling of solidarity in the classes increases vigorously after graduation. The increasing importance and joyousness of the class reunions at the end of three years, and then of each successive period of five years,

welds the members of the class into a constantly closer friendship. Graduates often are surprised to find that, by the time their class has been ten or fifteen years out of college, the old college lines of association are broken down. Men who were not much known in college come to the front, and men who were leaders there do not always establish their leadership in after life. The class gatherings of twenty and twenty-five years after graduation have a general good-fellowship that was hardly known among the older classes in undergraduate days. The recent classes will find much less change in this respect, for the College as a whole, in spite of the great increase in numbers, is more closely organized than it used to be.

One force which has made for unity of feeling in the College has been the concentration of the control of athletics in an Athletic Committee, in which, besides three members of the Faculty, there are three graduates selected by the Corporation, and three undergraduates elected by the captains and managers of the major teams. This organization has increased the feeling that athletics is the concern of the College as a whole. Added to this force is the fact that the constant defeats of twenty and twenty-five years ago forced the undergraduates to develop a system by which all available athletic material is brought to the surface in order to be tried out for the University teams. To-day each Freshman class is gone through as with a fine-tooth comb for available athletic material. Upper-class men and graduates take an active part in the search, and every boy who has strength and the athletic instinct is brought out for the sport in which he is most likely to be successful. The variety of uniforms when the candidates for the Freshman football team line up in the autumn is be-

wildering; half the schools in the country seem to be represented by the letters on their sweaters. In athletics, moreover, the mingling is on perfectly even terms. Certain schools naturally have prestige, but a boy who comes from a far Western state is not apt to know much about schools in the East, and he knows nothing and cares nothing about the societies which, a generation ago, dominated athletics and all college life. The record of victories in the last five or ten years seems to show that the new system is working well. In athletics as in war, *esprit de corps* is essential for victory, and there can be no *esprit de corps* when there is dissension.

This state of affairs—a free and open democracy in which leadership goes by desert—is a new and happy development. It is a new one at Harvard largely because in the days of the small classes it was not necessary. Then the democracy of the college was like the democracy of the older New England, which, as has been said, was based on a strong and ancient tradition of aristocracy. The democracy in the older New England days was limited to public interests; and though it might be that every voter called every other voter by his first name, there were still leading families and unformulated but entirely real social strata. To-day, though societies and clubs exist at Harvard, as will be shown a little later, they are generally inconspicuous to men outside of them, and their influence on the general college life is unimportant.

The chief common interest of the College as a whole, at Harvard as in all other American colleges, is undoubtedly athletics; and in the main what can be said of athletics at Harvard is about what might be said of

it at any other American university. I shall, therefore, in these pages, try to confine myself to what is characteristic of the place.

In general, as in other American colleges, athletics seems to dominate the minds of undergraduates more than it actually does. In the first place, athletics makes more news for the newspapers, both undergraduate journals and the public press, than do intellectual interests. It is extremely difficult to make items about a piece of research in a laboratory or the Library; and since the beginning of time muscle has been looked on as one of the important constituents of a hero.

The most distinctive feature of athletics at Harvard is that the season in every branch of sport closes with a contest with Yale. There are many other contests, and contests with rivals for whom there is strong respect and good feeling, but a season is really successful only when it ends with a victory over the ancient rivals at New Haven.

The major sports, as they are called at Harvard as elsewhere, are football, track athletics, baseball, rowing, and hockey; and the University teams in these sports alone are entitled to the H on their sweaters which is the dream of most school-boys who are looking forward to Harvard. The organization of these major sports is undertaken with great seriousness; and where so large a body of students is concerned, and where graduates keep up so intense an interest in athletics, the organization is bound to be formidable. Each team has, besides its captain, a manager who is responsible for a mass of business. In especial, he is held responsible by the graduate athletic management for the avoiding of excessive extravagance. The manager is always a Senior, who is selected by the captain of the team with

the approval of the Athletic Committee, after a competition in the Sophomore and Junior years. In the Sophomore year a call is issued through the daily *Crimson* for candidates for the management of the different teams. The men who present themselves are assigned by the manager for the year to various errands and minor chores, and thus have a chance to show their assiduity and business capacity. On the basis of this competition, a Sophomore is selected assistant manager, who, if he does well that year and again as a Junior, is likely to be chosen manager. Friendship has a considerable part in the choice in the end, and there is still reason for some dissatisfaction with the freedom of the competition. But since it is essential that a manager shall be agreeable to the captain and the other members of the team, success in business management cannot be the only ground for choice.

The chief sport of the autumn is football, which is taken by undergraduates and graduates alike with a seriousness to be matched only by the seriousness with which Englishmen look on the boat-races between Oxford and Cambridge. To be a successful coach is to go down to fame. Ex-Governor-General Forbes of the Philippines first made his mark by coaching a Harvard football team which beat Yale in the days when that was a very rare occurrence. In recent years there has been a graduate coach who has been paid a handsome salary. He calls out a number of old players to assist him in the work, most of whom give their time. The work of the coach is by no means confined to the autumn season of actual games. He is a member of the Intercollegiate Rules Committee, which each year gives long and careful discussion to changes in the rules, and he must keep track of all the available material in Col-

lege. In the spring there is a short season of practice for football.

The real work begins in the early autumn, usually a week or two before College opens, with practice in the rudiments of the game. The players must learn to catch the ball, to hold on to it, to start quickly and low. They must throw themselves at the tackling dummy and learn to disregard bruises. There are usually about eight regular games in the season. The earlier ones are short games with the teams of smaller colleges, which are looked on as practice games. By the end of October, the opponents become more serious, and the season approaches its climax in the Yale game through games with strong teams which not infrequently are victorious.

The Yale game, which is regularly played on the Saturday before Thanksgiving, at New Haven and on Soldiers Field in alternate years, is a great spectacle. When the games are to be played in the Stadium extra wooden seats are built up across the open end, and along the inner wall of the Stadium, so that seats are provided for forty thousand persons. Tickets are at a premium, and for a week beforehand Washington Street in Boston is lined with speculators who sell tickets at extravagant prices. Every effort is made to keep the tickets from getting into their hands, but there are always men to whom ten or twenty dollars for their right to draw two tickets is a great temptation.

On the day of the game, Soldiers Field and the entrance to it are thronged by half-past twelve. Harvard Square and the streets near the Stadium are lined with hawkers of the colors of both teams in flags, buttons, and sleeve-bands, and the great gray Stadium itself is transformed into a mass of dark color, relieved with red and

blue. As the time for the game approaches, and the teams trot in after their captains, the cheering breaks forth and the cheer-leaders for Yale on one side of the field and Harvard on the other, begin their strange activities. Between the halves, each side sings its college songs, often with admirable effect. Once the game has begun, there is either tense silence, or frenzied cheering from the side which is winning and desperate cheering from the side which is losing. The game is one of the great sights of America.

After the football season out-of-door sports at Harvard are dependent on a harsh and uncertain climate. Skating out-of-doors sometimes begins by Thanksgiving, sometimes not until January. Hockey, therefore, which has made great progress in popularity in the last few years, what between warm weather and snow leads a precarious life. Now that there is a rink of artificial ice in Boston, the hockey team, at any rate, is able to get regular exercise, and the game, which is comparatively new in the United States, has gained ground rapidly and is now one of the so-called "major sports." Most of the preparatory schools now have rinks which are kept clear of snow in winter, and at some of the boarding-schools it is an important part of the winter life. At Harvard the most important hockey games are those with Princeton and with Yale, though the games with McGill University of Montreal have the prestige of international contests.

Besides the University hockey team, there are many other teams playing, and in recent years the Student Council has organized a regular series of scrub games. The Athletic Association provides several out-of-door rinks which are kept flooded and free of snow, and on these, scrub teams of joyously variegated names, such

as the Chuck-a-pucks, the Fortune-Hunters, the Easy Marks, and the Blue Jays, meet in a series of games, with cups for the team which wins the series. Altogether, several hundred men take part in hockey during the winter.

With the breaking up of the winter and the reluctant approach of spring in March, the spring athletics get under way. The chief of these are tennis, track athletics, baseball, and rowing, though both lacrosse and Association football ("soccer") attract a small, but loyal and efficient, body of players. Rowing, for the men who have a chance for the University and Freshman crews, begins indoors, in the tank in the University boathouse or on the rowing machines. This indoor practice is monotonous and not completely satisfactory as a means of instruction, but it gets the men together, and they are expected to keep in training; and after the practice in the tank or on the machines they usually have a short run together. When the ice on the Charles River breaks up, usually not later than early March, the crews go out on the river; and from then on, the coach gives close attention to all men who are likely to win a seat in the University boat and to the candidates for the Freshman crew. Of these men there are usually in the early part of the season, four to six crews; and in addition there are the class crews, which have a race in May.

The system of coaching has changed a good deal from time to time. The ideal system would be to have the coaching done by a graduate, but it is unusual to find a graduate who is a good coach and who can also give up practically every afternoon for two or three months in the spring. Harvard has therefore, of recent years, like almost all American colleges which put crews on the

water, had a professional coach. He has been, however, regarded rather as an instructor in rowing, and he is under the direction of the captain of the crew and is advised by a committee of graduates. At Harvard the captain has always had the active direction of the crew and the final decision about its make-up.

In recent years the University crew has been tentatively chosen early in the season, but a second crew is kept together and the two have frequent races and there are frequent shifts of men from one boat to the other. Towards the end of May there is usually a two-mile race with Cornell, alternately on the Charles River and at Ithaca. By this time the University crew is generally chosen. In 1912 Princeton took part in this race. The second crew has in recent years rowed in the American-Henley Regatta at Philadelphia.[1] About the same time the Freshman crews have various races with near-by schools, most of them being rowed on the Charles.

The contests, however, towards which all rowing tends are the races with Yale at New London on the day after Commencement; and towards these races all the long months of hard work are pointed. The races with Yale have been rowed since 1878 on the Thames River above the railroad bridge at New London. Originally there were only eight-oared races between the University and the Freshman crews of the two institutions; but four-oared races between the substitutes have now become a regular part of the regatta, and in the last two or three years there have been informal races between Freshman fours and second University fours, and usually a half-mile race between crews made up of

[1] In 1914 the second crew won the Grand Challenge Cup at Henley on the Thames, England.

graduates who are limited strictly to one or two days of preparation.

The crews of both colleges go to New London ten days or a fortnight before the races and are allowed to take some of their final examinations at the quarters. Each crew has its permanent quarters, with boathouses, and comforts somewhat beyond those of camping life. On the day of the races great throngs of people come from Boston and New York and from greater distances. On both sides of the river are railroads on which observation trains are run, consisting of long trains of flat cars with tiers of seats. The four-oar and the Freshman crews usually row their two-mile races in the morning, one starting at the Navy Yard where the other ends; and the University four-mile race is apt to be rowed at high tide in the afternoon. In 1914, the two crews had rowed forty-eight races against each other, and of that number each had won twenty-four. Each has had long series of victories, as is the case in England in the races between Oxford and Cambridge. In the twenty-one years from 1885 to 1905, inclusive, Yale won all but three of the races. In the six years beginning in 1908, Harvard won all the races.

Rowing has always stood high at Harvard, and the boats have been manned by men of admirable quality. The number of those who have reached success in later life is notable, beginning with President Eliot and Professor Alexander Agassiz, who were on the first Harvard crew which rowed with, and beat, Yale.

The baseball men at Harvard have the advantage for early practice of a large baseball cage. Here the pitchers and catchers are given practice and instruction in their respective parts, and the other men have practice in batting and fielding. The tardy and variable spring

of New England makes out-of-door practice uncertain and full of discomfort until the end of April. Usually the nine goes off on a trip during the spring holidays, which come in the second or third week of the month. When they return, the regular schedule begins, with, usually, two games a week. In baseball, however, as in all other sports at Harvard, the final end of the team is to win from Yale. The Yale games come in Commencement week. The first game is played at New Haven on Tuesday, and the return game at Cambridge the next day. If each college wins one of these games, a final and deciding game is played on neutral ground on the succeeding Saturday. In the forty-five years in which the series have been played with Yale, Harvard has won in twenty-four and Yale in eighteen. In three years the series was tied and there was no deciding game.

Besides the regular work for the University team, there is a long series of scrub baseball games for cups presented by Joseph Leiter, '91. These scrub teams have the same sort of fantastic names as the scrub hockey teams, and they play with considerable earnestness.

The men in track athletics also get out into regular practice in the early spring, though for some of the sports gymnasium work is feasible. There is a board track behind the gymnasium, on which the men are able to keep in condition during the winter, and the long-distance runners especially get good practice here. By the first part of April, real business begins, and then Soldiers Field is filled with runners, hurdlers, jumpers, shot-putters, and hammer-throwers, all working under their respective coaches. There are two "dual meets" in May, one with Dartmouth or with

Cornell, and the other, in the following week, with Yale. Harvard also sends a team to take part in the Intercollegiate games. The latter are not very satisfactory for the large universities, because of the uncertainty which is introduced by the appearance of single men from many small colleges all over the country who can carry off points in one or two events. The dual meet with Yale is the important thing, and the event in which the College takes most interest. In the twenty-three years in which the two universities have held these meets, Harvard has won eleven victories and Yale twelve.

Though lacrosse has not yet been admitted to a place among the major sports, and has not attracted general interest in the College, the team's record of successes has been admirable, and it has won championships pretty consistently for a good many years. At present, more men seem to be drawn into the competition for the teams. The game has been notable for the number of students with high records in scholarship who have played in championship teams.

The most popular sport in the spring is tennis. The Athletic Association maintains numerous tennis courts, for the use of which a small fee is charged, sufficient to keep them in condition. These courts are in use practically all day in the spring and autumn. A regular tournament is held for the College championship, and a University team is sent to the Intercollegiate tournament.

The river in the spring is often crowded with boats. Both the University and the Weld boathouses have wherries for beginners, and instructors who teach men the rudiments of rowing in racing boats. Besides the wherries and shells, there are pair-oars and four-oars at the disposal of men who want to row. In the season,

before the class-races, there may be as many as fifteen or twenty eights out on the river.

The whole system of athletics is under the control and direction of the Committee on Athletic Sports, which in the generation since its creation has dealt with many troubled questions of amateur standing, and has kept athletics from entirely dominating college life. An athletic committee was first appointed in 1882. Before that time, there was no athletic problem in American colleges. Then a professor drew the attention of the Faculty to the schedule of the baseball team for the coming season, in which there were twenty-eight games, of which nineteen were to be played away from Cambridge, and he inquired how much time it was supposed that the members of the nine would give to their college work. After three years two undergraduates were added to the committee, and in 1888 the committee was again remodeled and constituted in the form which it has to-day, consisting of three members of the Faculty, three graduates of the College appointed by the President and Fellows with the consent of the Overseers, and three undergraduates chosen by the captains and managers of the leading teams. This has proved an admirable constitution. In practice, the graduates are apt not to get to the meetings very regularly, and the business is transacted by the Faculty members and undergraduates, always with entire harmony and reasonableness. As precedents have been established, more and more authority has been thrown on the chairman of the committee and he now settles many questions offhand.

It is safe to say that few men have deserved better at the hands of the American educated public than the

successive chairmen of the Harvard Athletic Committee. They and their committees have broken the way through the jungle of complicated questions arising under amateur standing in a democracy, where education reaches all layers of society. The rulings which they have made have been constantly followed elsewhere; and they have been freely consulted by the authorities of other colleges in difficult cases. Considering that the whole problem of athletics is only a generation old and that all questions have had to be discussed from the bottom up, the progress has been highly satisfactory. There are still questions to be settled; in particular the rules regarding amateur standing are still too technical; but the committee has established at Harvard the principle that college athletics must rest on three principles: in the first place, the College exists for intellectual purposes, and whenever any conflict arises between these and athletics, the latter must give way; in the second place, athletics has no place in the College except as a means of promoting healthy sport; the pursuit of athletics for the sake of money or in a spirit of enmity must be held always an evil; in the third place, the members of a faculty are unfitted by temperament and by the pressure of their own work for settling athletic questions except with the counsel and support of graduates and undergraduates.

The business management of University athletics has been for a number of years in the hands of a Graduate Treasurer, for the amount of money to be handled long since outgrew the business capacity of undergraduates. The resort of graduates and of the general public to football and baseball games has increased rapidly of recent years, and at present shows no signs of falling off. Undergraduates are admitted by season ticket to

all games, but there seems no reason at present for reducing the price of admission to the general public. The great sums of money which are thus received produce the most serious problem of athletics which has yet to be worked out in American colleges.

At present, the money is for the most part expended with reasonable advantage, though the cost of maintaining the teams is still far too large. Captains and trainers can be taught economy only under stress and unceasing watchfulness. The Athletic Committee at Harvard has sternly set its face against unnecessary expenditures and has largely reduced them. Each man at the training table pays what he would pay for his board at his regular boarding-place, and only the excess is paid by the Athletic Association. The money laid out on uniforms and equipment and for travel is vigorously scrutinized, and captains and managers must give an exact account of all their expenditures.

What is left over, after paying for the expenses of the teams and their training, goes to the permanent improvement of athletic fields. There are not yet enough tennis courts for general use, and there is still a considerable tract of marsh-land on Soldiers Field which must be raised to level and graded. Moreover the Athletic Association still has a large balance to pay on the cost of the Stadium, and it has recently assumed the balance of the expense of building the Varsity Club. For a number of years to come, therefore, the Athletic Association will not be embarrassed by unexpended surplus.

The general management of the Athletic Association is in the charge of the Graduate Treasurer, who is responsible for economy on the part of the coaches and the undergraduate managers. He is also the general

athletic adviser, charged with the duty of promoting healthy athletic exercise among as many students as can be brought out. He nurses the minor sports and sees that they have a full chance and he is in constant communication with all the coaches and captains of all the teams. The possibilities of healthy influence on the undergraduate body by a good Graduate Treasurer are indefinite.

Aside from athletics undergraduates have many interests which are more or less intellectual in character.

The history of journalism at Harvard is now over a hundred years old. The earliest paper published by students was the *Harvard Lyceum,* which first appeared July 14, 1810, and lived somewhat more than a year. Among its editors were Edward Everett, and Samuel Gilman, the author of "Fair Harvard." Some sixteen years later, in March, 1827, appeared the *Harvard Register,* which lived for nearly a year. On its board were George S. Hillard, R. C. Winthrop, and C. C. Felton. Two years later the *Collegian,* among the editors of which was Oliver Wendell Holmes, issued sixteen numbers, beginning in September, 1835. *Harvardiana,* which had James Russell Lowell for one of its editors, began in 1835 and lived till June, 1838. Then there was a gap until December, 1854, when the *Harvard Magazine* appeared, which lasted till 1864. Among the editors of this were F. B. Sanborn, Phillips Brooks, and J. B. Greenough. After a lapse of two years, another *Collegian* appeared, which was suppressed by the Faculty after three numbers.

In May, 1866, was founded the *Advocate,* which has been published fortnightly ever since. It has had as competitors the *Magenta,* founded in 1873, which later

changed its name to the *Crimson,* in 1883 became merged with the daily *Herald,* and is now the daily college paper; and the *Harvard Monthly,* which was first issued in 1885. Besides these, there is the *Lampoon,* founded in 1876, and the *Illustrated Magazine,* founded in 1899. The students in the Law School publish the *Harvard Law Review* monthly during the academic year, and the engineering students a quarterly called the *Harvard Engineering Journal.* Other publications are the *Musical Review* and the *Architectural Magazine.*

The *Crimson,* which is a folio sheet, usually of eight pages, about half of it advertising, prints daily through the college year accounts of games, meetings, and lectures, and various other items of undergraduate life. It has, what is perhaps its most important asset, official and semi-official notices of meetings and of calls for athletic teams; and the officers of the College use it as a medium for giving out special notices. It has also an editorial column in which it discusses whatever matters of undergraduate interest occur to the editors during the year. On important occasions the editorial policy is carefully discussed by the editors, since the *Crimson* represents the undergraduate opinion, and almost always satisfactorily.

A place on the *Crimson* board is won only after an exceedingly keen competition, in which candidates think night and day of nothing but finding news. The managing editor gives them assignments and they are also expected to show their originality by tapping fresh sources of news. The business managers gain their places chiefly by their activity in obtaining advertisements. For both the editorial and the business positions the competition is so keen, and a place on the board is so highly valued, that the *Crimson* is manned by men of

force and standing among the undergraduates. It is understood that the paper is a profitable enterprise and that generous dividends are paid each year to the editors. They are now on the point of building a house of their own, which will have a place for the printing plant and comfortable editorial rooms.

Of the literary papers, the *Advocate,* as before stated, is the oldest. It publishes stories, verse, essays, and reviews. Its distinctive aim is to be readable. It has had many distinguished editors.

The *Harvard Monthly,* which was established in 1885, soon after the merger of the *Crimson* with the *Daily Herald,* has on the whole aimed at a higher literary level than any other of the college publications. It is rather more distinctively the organ of the literary set and of the advanced thinkers among the undergraduates than any of the other papers. The *Harvard Illustrated Magazine* is a more recent sheet, which prints articles and stories of great variety, with illustrations from drawings or from photographs. It is not yet old enough to have established very strong traditions.

The *Lampoon* is the oldest and the most successful college humorous paper in the country. Among its founders in 1876 were Robert Grant, F. J. Stimson (J. S. of Dale), J. T. Wheelwright, F. G. Attwood, whose drawings were so long a feature of *Life,* and Edward S. Martin. It lapsed for a few months in 1880-81 but was renewed, and has been in vigorous existence ever since. Among the reviewers of the *Lampoon* in March, 1881, were Curtis Guild, '81, and William R. Thayer, '81, the biographer of Cavour. Among other editors have been Barrett Wendell, '77, C. A. Coolidge, '81, Owen Wister, '82, George Santayana, '86, Winthrop Ames, '95, C. M. Flandrau, '95, and E. G. Knoblauch, '96. It has always

had a notable supply of graceful and humorous verse and its drawings have made up in humor what they have sometimes lacked in finish. It has prospered in the world, for it has a considerable circulation outside the College, so that its advertising pages are well filled. Out of its savings it has built an admirably designed little building in the Dutch style on Mt. Auburn Street, and its dinners, to which the graduates come in considerable numbers, have long been famous. In 1883, John A. Mitchell started *Life* with the assistance of some of the *Lampoon's* former editors, including F. G. Attwood and E. S. Martin, and " Lampy " familiarly refers to *Life* as its child.

Besides the newspapers there are many clubs and societies founded on common intellectual interests. In the *Harvard University Register* there are notices of twenty-one such clubs. A few examples will show how varied they are in character: the Anthropological Society, the Boylston Chemical Club, the Harvard Engineering Society, the Harvard Mathematical Club, the Topiarian Club, the Cercle Français, the Circolo Italiano, the Deutscher Verein, the Harvard Zionist Society, and the Harvard Dramatic Club. At the meetings of these societies there are usually one or more papers read by members, followed by some simple repast, for the social side is an important part of their purpose.

The activities of these societies naturally vary considerably from year to year with the activity and efficiency of the officers; and one which has been slumbering may burst into activities which suddenly make its name familiar to the readers of the *Crimson*. These societies usually have graduate students among their members, and they merge gradually into such associa-

tions as the Modern Language Conference, which is an association composed of graduate students and members of the Faculty, before which papers of much learning are read and discussed. Each of the departments maintains an association or society of this general nature.

Besides these societies there are several active musical clubs. The oldest of these is the Pierian Sodality, which was founded in 1808 and has had continuous existence ever since. Under the old-fashioned sonorousness of its name lives the college orchestra, which gives concerts in Cambridge and Boston, often ambitious in the type of music played. It has club-rooms and rehearses twice a month. The Glee Club, which gives many concerts in Boston and the neighborhood, has at present about forty members. In its concerts it is often joined by the Banjo Club and the Mandolin Club, and the three have a common organization under the name of the Harvard Musical Clubs. Besides these associations, there is also the Musical Club, which was founded in 1898 to promote musical knowledge and appreciation among the members of the University. It has fortnightly musical meetings, at which members and others play informally, and an annual fall concert, at which music composed by its members is frequently performed. The tradition of music at Harvard has long been strong. Boston was a pioneer in the establishment of orchestral music, and the city and the College have acted and reacted on each other in their musical development.

The Harvard Musical Association, which grew out of the Pierian Sodality, was founded in 1837. For many years it maintained an annual series of orchestral concerts, out of which grew, through the generous support of Major H. L. Higginson, the Boston Symphony Orchestra. The Harvard Musical Association has a house

in Boston on West Cedar Street, with a large and valuable collection of music. There it has fortnightly meetings, with music. By its constitution, the greater part of its membership must consist of Harvard graduates.

Debating has had a somewhat checkered and spasmodic career at Harvard, with a good deal of change in the formal organization. At present, there is a Harvard Debating Council which has general management of the intercollegiate debates with Yale and Princeton. In these debates, since 1892, Harvard has won from Yale seventeen times out of twenty-one, and since 1895 from Princeton ten times out of seventeen. The debating was strongest when it had the stimulus of Professor George P. Baker, '87, who practically created the modern study of argumentation.

Besides the Debating Council there is a Freshman debating society and a Harvard chapter of the fraternity of Delta Sigma Rho, the intercollegiate debating society. The Speakers' Club was founded in 1908, partly in reaction against the seriousness of, and the heavy labor involved in, intercollegiate debating. It has fortnightly dinners in its club-house, followed by the discussion of some subject announced beforehand; it arranges for occasional public addresses by members of the Faculty or distinguished men from outside; and it has an annual prize contest in extemporaneous speaking.

The chief difficulty with debating at Harvard seems to be, in the first place, that the intercollegiate debaters, in their zest for victory, have set a standard of thoroughness which to most undergraduates seems out of proportion to the value of the results. Moreover, the subjects which have been discussed have been the largest and most complicated questions which have perplexed the nation, so that a moderate amount of preparation

is insufficient for thorough knowledge, and thorough preparation involves a study of problems of economics and government beyond the resources and patience of most undergraduates. The questions have been in the main drawn from the science of economics or government rather than from politics, and for that reason have not drawn on the natural contentiousness of human nature.

Alongside of the debating societies, and sharing with them their interests, are various political societies. At the time of a presidential election, the political clubs proper always blossom into activity. Among others which are dealing with the active interests of the day are the Harvard Men's League for Woman Suffrage, founded in 1911, the Social Politics Club, founded in 1909, and the Harvard Socialist Club, founded in 1908. There is always at Harvard and always will be a body of earnest radicals who believe, to quote from the constitution of the Social Politics Club, "that the world is not finished." Such men are taken by the College as a whole with a mingling of humor and respect. They make an active ferment which keeps the more serious undergraduates from stagnating, though they do not often make much impression on any large portion of the College.

The religious and philanthropic interests of the College are numerous and active, as befits an institution which was founded "for the furthering of the said college and the said members thereof from time to time in piety, morality and learning." In the early days, as we have seen, the instruction was chiefly religious, and only gradually through the seventeenth century did more worldly interests take the lead. Until within a generation, all students were required to meet daily in

the College Chapel, and the University maintains on its seal the motto, "Christo et Ecclesiæ."

Since October, 1886, attendance at daily prayers and at the Sunday services has ceased to be compulsory. At that time also was instituted the board of five preachers, which the University has drawn from various Christian denominations, and which always includes some members who live at a distance from Cambridge. Each member of the board is usually in service for two terms of two weeks each, during which he occupies the preacher's rooms in Wadsworth House. He conducts a short morning service in Appleton Chapel at a quarter before nine, and he has regular hours in the rooms in Wadsworth House during which students may call on him. Of this privilege they avail themselves freely, and the testimony of the preachers is that their service on the board is most interesting and stimulating. There has been always a Sunday service in Appleton Chapel. For many years it was held in the evening, but since President Lowell's inauguration, it has been changed to the morning, and the President himself takes part, usually by reading one of the lessons from the Bible. The students have responded, and this morning service has taken on the pleasant tone of a family gathering.

The undergraduate religious and philanthropic interests are focused in the Phillips Brooks House Association, which has its headquarters in Phillips Brooks House. This was built in 1898-99 as a memorial to Bishop Phillips Brooks, '55, and it is the home of almost all the religious and philanthropic activities of the College.

The Phillips Brooks House Association federates for philanthropic work the religious societies of the Orthodox-Congregationalist, Episcopalian, Roman Catholic,

and Unitarian denominations, and it has besides a large number of independent members who are not affiliated with any of these societies. The executive cabinet of the Association includes, besides its own officers, the presidents of the Harvard University Christian Association, of St. Paul's Society (Episcopalian), of St. Paul's Catholic Club, and the Harvard-Andover Divinity Club, and the chairmen of the Social Service Committee, the Harvard Mission, and the Chapel Committee, and the Graduate Secretary and Social Service Secretary of the University. In 1912 there were three hundred and sixty men engaged in social-service work at Harvard under the direction of the Association. The work has now grown so important that it has a graduate secretary who gives his whole time to its direction.

The Social Service Committee has direct charge of most of the philanthropic work done by students. It sends teachers to the Prospect Union and the Cambridge Social Union, both of which support evening classes for mechanics, near the College, and it also sends instructors to the Cambridge Young Men's Christian Association, and details men to help immigrants, to aid in boys' clubs, to work at the juvenile courts, and to maintain home libraries and visit, both for settlements, and for the Associated Charities of Boston and Cambridge. There is little parade about the work; men run boys' clubs or do settlement work, or teach in evening classes because they want to help things along. The workers are drawn from all parts of the College,—athletes and scholars, club men and non-club men. There are so many of them now engaged in this work that their influence in sobering undergraduate life and enlarging the undergraduate horizon is an important fact in the Harvard College of to-day.

Of the distinctly religious, as distinguished from philanthropic, associations which find a home in Phillips Brooks House, the Harvard University Christian Association is the oldest, largest, and most comprehensive. It has no sectarian foundation, though as a matter of fact its members are largely the Orthodox Congregationalists who represent one development of the old Puritan churches of New England. It conducts classes for the study of the Bible and the discussion of religious problems, and holds regular Sunday meetings in Phillips Brooks House. St. Paul's Society, the organization of the Episcopalians at Harvard, has the Noble room in Phillips Brooks House, where it has a short service every Wednesday evening. It also arranges regular courses of lectures on subjects relating to the Episcopal Church, and a monthly corporate Communion for members of the society. St. Paul's Catholic Club was founded in 1893, to bring together the Catholics of the College. A few years ago its quarters were moved from the Phillips Brooks House to the Newman House on Mt. Auburn Street, where it has a meeting room and library and rooms for games. The club has frequent meetings, at which prominent clergymen and laymen speak, and to which non-Catholics are welcome. It has a permanent chaplain, appointed by the pastor of St. Paul's parish, with the approval of the Cardinal Archbishop of Boston. The Christian Science Society is not affiliated with the Phillips Brooks House Association, though its meetings are held in the Phillips Brooks House. It arranges lectures from time to time through the board of lectureship of the First Church of Christ Scientist of Boston.

The Harvard Mission consists of a student committee and a board of graduate trustees whose aim is to increase the interest of Harvard men in the work of Christian

missions. Its chief interest at present is in the Harvard Medical School in China. This was established at Shanghai in 1911, to give to the Chinese the best instruction in modern medical science that is possible under the circumstances. Its special aim is to train native Chinese doctors in modern scientific medicine, and to make them both physicians and health officers who can do something to improve the sanitary conditions of China. It is closely affiliated with the Harvard Medical School.

All these societies and associations, journalistic, intellectual, musical, and religious, bring men together on some other basis than the purely social. They are an active force for mingling together men from all parts of the country, from all schools, and from all varieties of social organization and affiliation. With so many opportunities for active interest, it is a man's own fault if he does not find a chance to develop his interests by mixing with other men. These activities do not often get into the newspapers, and they are therefore apt to be underestimated. To get any fair estimate of the life of Harvard College, they cannot be left out of account, for they have a very deep and strong effect on the life of the greater part of the students of the College.

Along with these, as the third chief interest of undergraduate life, are the purely social clubs and societies. The special character of these at Harvard, as at most American colleges, largely determines the distinctive tone of the undergraduate life. It is somewhat difficult to give a fair account of these clubs since so much depends upon the point of view from which one starts. To the man who comes to the College from the West,

or perhaps from some smaller town in the East, the old Harvard clubs of long traditions are apt to seem affairs of minor and local importance, and many students go through College knowing little or nothing about them. On the other hand, to the boy from what Dr. Holmes called the Brahmin caste of Boston, or from the like social stratum in New York or Philadelphia, especially if he comes from one of the large private schools in Boston or New York or one of the fashionable church boarding-schools, the small clubs sometimes seem the largest fact in undergraduate life. The two points of view are so divergent, that it is hard to present the subject in a way which will be fair to both. The keynote to a fair exposition of the social system of Harvard College life lies, I believe, in the dictum of a recent article in an undergraduate magazine, that "the significant thing about the clubs at Harvard is that they are unimportant." If this be taken with the emendation "unimportant to men outside of them," we shall start on a fair basis for an understanding of the system.

The largest club of all, which has equal relations to all the others, is the Harvard Union, the membership in which is open to all students in the University; and the fee of ten dollars is so low as to open its doors to almost everybody who may want to use it. The Union inhabits a very beautiful and commodious club-house, the gift of Major H. L. Higginson, of the Corporation, whose generosity to the University has been unceasing and is always guided by the most enlightened understanding of its needs. The house has dining-rooms, assembly-rooms, game-rooms, and billiard-rooms, and, upstairs, a large library fitted with an excellent collection of books, the generous nucleus of which was given by James Hazen Hyde, '98. Two or three book funds provide for the

increase of the library and for the provision of the current books. The most notable feature of the building is the great assembly-room, which is a hundred feet long and forty feet wide, with high paneling in oak, and fine barreled ceiling. On the walls are a number of pictures of distinguished graduates, including a splendid portrait of Major Higginson by John S. Sargent.

The Union is very freely used. The dining-room is crowded at certain hours and the reading-room and library are always well occupied. The managers provide a regular course of readings and entertainments and lectures by various men of distinction throughout the winter, and in the smaller rooms many meetings of societies are held.

In 1912 a wing was added to the Union to house the Varsity Club, which consists of past and present members of University teams and crews. It is dedicated to the memory of Francis Hardon Burr, of the class of 1910, captain of the football team, a member of the baseball and track teams, and a good scholar, who died of typhoid fever in the autumn after his graduation, leaving behind him a memory of high character and great promise. The Varsity Club has rooms for the various training tables and is the center of the athletics of the college.

Of the clubs and societies which are essentially social in purpose, there are thirty in the last number of the *Harvard University Register*. The list is constantly changing through natural processes of death and birth. Of these clubs the largest and best known are the Institute of 1770, the Delta Upsilon, Pi Eta, and the Hasty Pudding Club.

The Institute of 1770, to which men are elected as Sophomores, is in close though informal relation with

the Hasty Pudding Club, since almost all the members of the latter are also members of the former. It is the oldest undergraduate society now existing, and though it is now inactive, it was originally a literary and debating society and at one time had a very good library. The Institute has a club-house, however, where it maintains a table for its members. There was at one time a rule that no member should speak in Latin without special leave from the President, but this rule is no longer enforced. In recent years the Institute has been chiefly a shell for an inner body known as the *Δ. K. E.* This was originally a chapter of the national fraternity of the *Δ. K. E.*, but it was expelled a number of years ago, and is now a secret society with initiations which are understood to be elaborate. They include a "running" of the candidates, who are clothed in whatever fantastic garb and are required to do whatever foolish things the fertile minds of the members of the society may invent. They used to be a picturesque sight in the intermission between football games in the autumn, and occasionally on the streets of Cambridge or Boston.

The Hasty Pudding Club is perhaps the most characteristic and famous of all the Harvard societies. It was founded in 1795 to "cherish the feelings of friendship and patriotism." Among its first members were Horace Binney and Dr. J. Collins Warren. Its name came from the supper of hasty pudding, which was maintained for many years, though now it appears in a form adapted to the pampered tastes of the present day, as fried mush with maple syrup. Originally it was a debating and literary society, with a public performance in the spring at which an oration and poem were delivered. About 1845, the custom of performing a farce originated. This gave way about 1880 to a musical

comedy or farce, in which the words and the music are both written by members and the production is elaborated with throngs of highly trained chorus-singers. This play is given in the spring, and usually, after the performance in Cambridge, it is presented in Boston for the benefit of the sisters and mothers of the members. The club-house on Holyoke Street consists chiefly of the theater. It is interesting for the large numbers of old "shingles" or illustrated posters of dramatic performances, with the names of many men of distinguished careers appearing in the casts.

The Pi Eta, which has a varying number of members, usually thirty or forty from each class, has a very comfortable house on Winthrop Square. Like the Hasty Pudding Club, it has a theater in which it gives performances each year; usually a musical comedy, of which both book and music are produced by some of the members, and there is a plentiful chance for dances by the brawny chorus. These performances also are usually repeated in Boston and two or three neighboring places for the benefit of the friends of the Club. The Pi Eta was founded in 1860.

The Delta Upsilon, founded in 1880, has a house on Harvard Street. Its members are elected largely on the basis of scholarship, and its ambition is to have as many of the leading scholars of the successive classes as possible. Its principal public activity is in the revival of old plays, which it performs every spring. It now has a record of having revived and performed more old English plays than any other organization in the world.

The Signet, which was founded in 1870, has a handsome house, with a good library, on the corner of Dunster and Mount Auburn streets. It has strong literary traditions, which are maintained by the regulation

that a certain proportion of its members shall be drawn from the undergraduate publications. Its initiations are lively, and at any rate pseudo-literary, occasions, in which members of the Faculty frequently take part. Its annual dinners are frequently made notable by poems and after-dinner speeches from graduates of distinction.

Another type of club, which on the whole is most distinctively characteristic of Harvard life, is the small club, taking in from three to four up to ten or fifteen members from each class. Of this type the Porcellian, founded in 1790, is the oldest. There are now a considerable number of such clubs, but the number is somewhat variable, since new ones are formed every now and then. The older ones have comfortable and even luxurious houses, and most of them maintain tables for their members. Though the feeling of brotherhood in these clubs is very close, they are not secret societies. They approach rather the type of the club in England, or in the older cities of America, in that election to them is based on congeniality and good-fellowship rather than on special tastes, literary or otherwise. In most of these small clubs the graduates keep up an active interest, and go frequently to the graduate dinners. The *University Register* has fifteen to twenty such clubs in its list, but the number cannot be made exact, for some of them run off into the larger societies, like the Hasty Pudding Club and the Pi Eta.

The Greek letter fraternities have taken little hold at Harvard, though the names of several appear in the *Register*. The general spirit of the place is against them. Any large college is of necessity chiefly interested in its own affairs, and the sense of reverence for solemn secrets which seems to be necessary to the prosperity of

a Greek letter society has never flourished at Harvard. In times past certain of the leading fraternities, such as the Alpha Delta Phi, the Delta Kappa Upsilon, and the Zeta Psi, have established chapters at Harvard. Each of these three has either expelled the Harvard Chapter or has withdrawn the charter by amicable arrangement. There are, however, a few Greek letter fraternities which still maintain chapters at Harvard.

The Phi Beta Kappa at Harvard is one of the oldest chapters in the country, for its charter was granted in 1779, three years after the founding of the parent chapter at William and Mary College in Virginia. The catalogue of the chapter has a long list of distinguished names among the members, and even more among the orators and poets at the annual meetings. Among these orators have been John Quincy Adams in 1788, Josiah Quincy in 1794, Edward Everett in 1824, Ralph Waldo Emerson, with the oration on "The American Scholar," in 1837, Charles Sumner in 1846, Henry Ward Beecher in 1855, George William Curtis in 1862, Emerson again in 1867, Wendell Phillips in 1881, Carl Schurz in 1882, and Charles Francis Adams in 1883, with the oration on "A College Fetich," which stirred the country to discussing the value of the classics in education. Other orators in the last thirty years have been President Eliot, Senator Henry Cabot Lodge, John Fiske, James (Viscount) Bryce, Horace Howard Furness, Woodrow Wilson, Charles E. Hughes, and Josiah Royce. The poets have been hardly less distinguished. Among them were Henry Wadsworth Longfellow in 1833, Ralph Waldo Emerson in 1834, Oliver Wendell Holmes in 1836, Bret Harte in 1871, and in recent years Richard Watson Gilder, George Santayana, Dean Briggs, Percy MacKaye, and Henry Van Dyke.

Election to the Phi Beta Kappa is on the basis of scholarship, although other evidences of ability are taken into account. The first eight men are elected before the middle of the Junior year, and they are usually the first eight scholars of the class on the work down to that period. The other twenty-two are elected in the Senior year, and in choosing them the society holds itself somewhat less bound to the rank list; so that there are always a few men elected, proof of whose ability comes in part from outside the classroom. The Phi Beta Kappa now has some social life of its own. The members dine together every week in a tower-room at Memorial Hall; and they have an informal baseball nine and some other activities.

The dormitories, in which the twenty-two hundred or more undergraduates are quartered, are of necessity a good deal scattered. The two chief groups of them are the dormitories in the Yard, owned by the College, and the dormitories along Massachusetts Avenue and Mount Auburn Street, built by private owners. Besides these, the College has two dormitories, Perkins and Conant Hall, a quarter of a mile away to the north, on Oxford Street, and Walter Hastings Hall, about the same distance up Massachusetts Avenue. Of these Conant is now regularly assigned to graduate students, and Perkins and Walter Hastings halls are largely occupied by graduate students and law students.

The oldest of the College dormitories is Hollis Hall, which was built in 1763, and named after the Hollis family, so many of whom were benefactors of the College. Stoughton, the next building to it on the north, was built in 1805, and Holworthy, the adjoining building at the north end of the yard, in 1812. After the building of these halls, a long period elapsed; for Grays

Hall, at the south end of the Yard, which was erected by the Corporation as an investment, and named after a family of notable benefactors, was not finished until 1863. Thayer Hall, given by Nathaniel Thayer, was built in 1869; Weld Hall, given by William F. Weld, and Matthews Hall, given by Nathan Matthews, in 1871. The latter group of buildings unfortunately came at the saddest period of American architecture. The older buildings, Hollis, Stoughton, and Holworthy, on the other hand, are excellent examples of the fine proportions which dignified even plain and simple buildings in America at the end of the eighteenth and the beginning of the nineteenth century.

Up to about twenty-five years ago the rooms in the Yard were much sought after by undergraduates. About that time, however, the development of plumbing in America altered college life. What had been a luxury, within five or ten years became a necessity. Enterprising builders, recognizing this fact, put up a number of private dormitories. Beck Hall, built in 1882, was followed eight or ten years after by Claverly Hall, Apley Court, Westmorly, Randolph Hall, Dunster Hall; they are built with something like luxury, though the rooms are often small. Three of them have swimming tanks in the basement, and in all each room has its private bathroom. Dunster is built with a great interior court, with handsome stone galleries. Most of these dormitories are situated on Mount Auburn Street and its neighborhood to the south of the Yard, and constitute what has become known as the "Gold Coast." Besides these there are other private dormitories more or less scattered about Cambridge. Among these are Craigie Hall, some distance up Mount Auburn Street; Dana Chambers; Drayton Hall near the Yard; Little's

A Westerly View of the Colledges in Cambridge, New England

Engraved by Paul Revere

Block, Fairfax Hall, and Hampden Hall on Massachusetts Avenue opposite the Yard; Russell Hall on Mount Auburn Street, and Ware Hall, some distance down Harvard Street towards Boston. The demand for private dormitories is at present somewhat more than supplied.

The drift away from the Yard twenty years ago was accelerated by the fond belief of the Corporation that the taste of young men for roughing it would make them like to live in buildings in which the plumbing was half a generation behind the standard of comfort among people of very moderate means. Since plumbing is very expensive, and it is an ancient and honorable principle of the Corporation that every possible cent of the income of the College shall be used for purposes of instruction, the Corporation was very slow to install modern plumbing, and when they began, they spent money grudgingly and ineffectively. Accordingly, the private dormitories which offered comfort and some luxury easily drew the well-to-do away from the Yard. Just about the same time, the College, as has been explained above, began to outgrow its small college social system; and as a result there was a serious cleavage between the men who lived in the Yard and the men in the private dormitories; and in a few classes this cleavage developed parties in the class elections. This evil is now being counteracted by the successful movement in the last few years to bring the Senior class together for their final year in rooms in the Yard. In the immediate future the Freshman dormitories, which are now nearly completed, along the river near the Weld boathouse, will mix the Freshmen together, and so any possible separation by dormitories can exist only in the Sophomore and Junior years.

In general, at Harvard, as in any considerable community of healthy American youth, wealth counts for very little and antiquity of family for even less. There are always men coming from families of great wealth or from families distinguished in society who make no impression either on the college life in general or on the club life. On the other hand, there are in every class men who are working their way through college or who come from remote places and wholly undistinguished parentage, who make themselves leaders in the college life and are elected to what the newspapers call "Harvard's most exclusive clubs." Naturally, as President Eliot pointed out in his book on University Administration, the small social clubs generally illustrate the principle that "birds of a feather flock together,"—a principle which obtains in all human as well as bird society and which democracy cannot eradicate and need not wish to.

The birds of a feather who thus flock together at Harvard have usually been so flocking at certain select boarding or private schools. The Institute of 1770, for example, in a recent year drew forty-five per cent of its membership from five boarding schools, and another twenty-eight per cent from four private schools in Boston. Such close associations would be pernicious if they were strictly closed, and if the affiliations dependent upon them were the only affiliations of undergraduate life.

As a matter of fact, athletics opens the door of such societies to many a fellow who comes to college without friends, and the many other interests and natural forms of association in a place where the social life is as active as at Harvard make many kinds of feathers by which birds may flock together. The life

of a large college of necessity approaches the life of a city, and all through the classes little groups of men form themselves into societies and clubs which give them the greatest comfort and satisfaction. In many cases quite informal associations of this sort crystallize into a society and find a permanent history, but many of them pass with the men who form them. No man, however, need be lonely at Harvard. If he is so, it is because he is shy or lacks the other qualities which make for easy and agreeable intercourse among men.

A notable phenomenon in the life of Harvard College in recent years is the great increase in the number of men who are earning money towards their own support. It has recently been estimated, on the basis of the applications for work at the Employment Office and the returns of places filled made to that office, that one half to two thirds of the students in Harvard College are working for themselves. The number of men who wholly support themselves is small, for a man must not only be a very hard worker, but must have unusual ability and strength, to be able to do this and to keep up with his college work. On the other hand, a large part of the greatly increased number of young men in America who go to college has been drawn from families of small means, and the large colleges are getting just as many of them as the small colleges. Most of these men who are working for themselves are of excellent quality: they have energy, ambition, and capacity, or they could not keep their places in so severe a contest.

To help these men the College maintains an Employment Office, the secretary of which is a permanent administrative officer. It is his business to talk with all applicants for work, to estimate their capacity, and to assign them to the various jobs which come to his notice.

To find work for them he canvasses, so far as he has time, the various opportunities for part-time employment in Cambridge and Boston. The kinds of employment are greatly varied. In the report of the Secretary for Employment in 1910, sixty-eight different kinds of temporary work are listed, among them the following: agent, camp counsellor, carpenter, chauffeur, choreman, conductor, draughtsman, foreman, genealogist, hotel employee, meter-reader, play-ground director, scene-shifter, snow-shoveler, tutor, typewriter, and waiter. In all about two thousand and three hundred temporary positions were filled through the office in that year. There are also always many other men who find work for themselves and do not appear on the records of the Employment Office.

The social position of these men is in no way affected by the work which they are doing to support themselves. Men who are earning money are to be found in all parts of the classes and in all the clubs and societies; and men who are in the clubs speak with pride of fellow members who are working their way. Earning money by students is now so common at Harvard College as to be almost commonplace; so far as it excites comment at all, the comment is favorable.

Of recent years, as has been said, the undergraduates have been giving much effort towards increasing the solidarity of undergraduate life. The classes have class smokers and other meetings at the Union, which are organized as soon as there are any class officers in the Freshman year. The Senior advisers start work by getting Freshmen together in clubs and making them acquainted with one another. Each year there are more activities in the way of athletics or journalism, philan-

THE COLLEGE YARD

Before the destruction of the elms

thropic work or societies, which bring the members of the class together.

The class organizations have resisted what it was prophesied would be the dissolving effect of the elective system, and the classes hold strongly together both in college and afterwards. Each class during the four years of its stay in college elects officers annually; and by a custom established in the late nineties the officers are changed each year, in order that as many men as possible may be given a chance and may be tried out by the class. The final judgment of the class on its leading men comes with the elections in the Senior year of officers for Class Day. By ancient custom, the officers consist of three marshals, a secretary, an orator, ivy orator, poet, odist, and chorister, a class committee, a class-day committee, and a photograph committee. In recent years a treasurer has been added. Of these officers the class committee and the secretary, and in recent years the three marshals, are permanent officers of the class whose functions continue after graduation. The secretary is a highly important person to the class: if he be energetic and interested, he can do much to keep his class together; but now that the classes number six or seven hundred, the position is getting to be a good deal of a burden. This burden is somewhat lightened by turning over the publication of the class reports to the office of the Alumni Association.

The great climax of student life comes with Class Day. For many years it fell on the Friday before Commencement, which was the last Wednesday in June. Now Commencement Week has been rearranged, and Class Day comes on Tuesday, and Commencement on Thursday of the next to the last week of June. Monday is devoted to the Phi Beta Kappa meeting, and Wednes-

day is a day of reunions of the classes and also of the Yale baseball game.

Class Day has long been a notable festival. The Yard is handsomely decorated with flags, rows of Japanese lanterns are strung between the trees in both quadrangles, and elaborate preparations are made for what is really the Senior's farewell to his college life.

The exercises of the day begin with a short service in Appleton Chapel, and then at eleven o'clock the class marches in cap and gown to Sanders Theatre. There the galleries are filled with mothers and sisters and friends. The Orator delivers his oration, the Poet reads his poem and the Odist his ode. Then the class and their guests disperse to various "spreads." Of these the principal ones in the middle of the day are that given by the Pi Eta Society in the Gymnasium and that of the Hasty Pudding Club in its own building on Holyoke Street. In the afternoon the Yard is closed to all but ticket-holders, and a host, which seems to include all the prettiest girls in the country, begins to gather soon after two o'clock. All through the day there are bands playing in various parts of the Yard. At three o'clock the Seniors assemble in front of Holworthy and then march around the Yard, cheering the buildings as they go, and over the river to the Stadium. In this march they are preceded by the graduates and undergraduates marshalled by their classes. Across the river the bowl of the Stadium is filled with guests and spectators. The graduates and the three undergraduate classes sit on the grass at the foot of the seats, ready to receive the Seniors.

Facing the bowl of the Stadium is erected the front of a Greek temple which was built some years ago for the performance of a Greek play. This makes an admi-

rable sounding-board; and in front of it the Ivy Orator delivers an oration which is expected to be full of satire and wit. Then the class cheers everybody, including the President of the University, the ladies, and the graduates, and the graduates respond; and when the cheering is all over, the guests shower the class and the graduates and each other with confetti and throw fine paper ribbons which make a multicolored cobweb over the whole face of the Stadium.

Then the crowds throng back to the Yard and scatter among the numerous "spreads"; for there are far more of these in the evening than in the middle of the day. The principal feasts are one behind Wadsworth House, one at the Signet Society on Dunster Street, one in the Phillips Brooks House, and one at Beck Hall. Besides these, however, there are many smaller ones, running down to little entertainments by single men in their rooms for their own immediate families. The Union is open for a spread with dancing during the evening. In 1912 there were sixteen spreads of societies or groups of men, important enough to be announced in the *Crimson*, but there were also many other smaller ones.

The Yard in the evening, if the weather is at all fine, is very beautiful. The strings of Japanese lanterns give the most enchanting sort of light, and the innumerable gay dresses brighten up the semi-darkness. The bands play by turn in various parts of the Yard, and the Glee Club sings. The evening is by ancient and recognized custom a time of flirtation, and the couples move in and out and form and reform at the various spreads, through the evening.

The gathering is cosmopolitan, for the University attracts its students from all sorts and conditions of

men; but with the care that is now taken to keep out all who have not received tickets from Seniors, the day invariably passes off in a seemly and delightful manner. Indeed, it could hardly be otherwise when there is the combination of June weather and young men and maidens in the full flower of youth.

III

THE GRADUATE SCHOOLS

Historical Origin. The Graduate School of Arts and Sciences. The Medical School. The Law School. The Divinity School. The Graduate Schools of Applied Science. The Graduate School of Business Administration. Radcliffe College. University Extension.

HARVARD COLLEGE is only one department of Harvard University, and though it is in a very real sense the heart of the University, nevertheless the graduate departments in many ways make more impression on the country at large than does the College; for to the various graduate schools throng men from other colleges all over the United States.

The work in the graduate schools falls into two classes, though the boundaries between them are not always clearly defined. On the one hand, there is graduate study in arts and sciences not specifically directed towards practical professional purposes; and on the other hand, there are the professional schools, which are preparing men directly for earning their livelihood in a profession. In the former class falls most of the work of the Graduate School of Arts and Sciences, though, like all such schools, this tends to become a professional school for teachers, especially for teachers in colleges. In the other class falls the work of the Medical School, the Dental School, the Law School, the Divinity School, the Schools of Applied Science, and the School of Business Administration. In all of these schools, however,

much research work is done; and in the Bussey Institution, where instruction and research in Economic Entomology, Animal Heredity, and Experimental Plant Morphology are carried on, the professional purpose is no more definite than in the Graduate School of Arts and Sciences. Much of the work in the scientific establishments of the University, which are considered in the next chapter, is intermingled with the graduate instruction.

On the other side, the relations between the various graduate schools and Harvard College, both historically and in the conduct of their work to-day, are very close. Practically all of them have grown out of instruction first given in Harvard College. For most of them necessary preparatory courses are given in Harvard College, and several professors give undergraduate instruction as well. In an institution which is the result of steady growth it is not possible to pull the whole apart, and there are many cases in which the efficiency of one department is increased by joint undertakings with another. In this way, though the departments of the University are now scattered geographically, yet new lines of intercourse are constantly arising to bind together the work that they are doing.

Historically, what we call to-day graduate work in the arts and sciences, and also preparation for the ministry, have been carried on since the founding of the College. Separate professional study began with the foundation of the Medical School in 1783; but professional study was not distinctively graduate study until well along in the administration of President Eliot.

In this chapter consideration is given first to the Graduate School of Arts and Sciences, then to the professional schools in the order of their foundation.

From the very beginning of the College the early records show that there have always been some graduate students resident at the College. Of the Class of 1642, the first class to be graduated, four out of nine members later received the A.M. from the College, and in the "Laws, Liberties and Orders of Harvard College," of 1642, Article 19 provides:—

Every scholar, that giveth up in writing a synopsis or summary of Logic, Natural and Moral Philosophy, Arithmetic, Geometry and Astronomy, and is ready to defend his theses or positions, withal skilled in the originals as aforesaid, and still continues honest and studious, at any public act after trial he shall be capable of the second degree, of Master of Arts.[1]

The effective organization of graduate study in the arts, however, did not come about until after 1870. We have seen that both the original plan of the Lawrence Scientific School and the University Lectures of President Hill's administration were aimed in this direction. Neither fulfilled the purpose satisfactorily, and graduate study was not really inaugurated at Harvard until the institution of the Graduate Department in 1872. This department, after eighteen years' trial, became in 1890 the Graduate School of Arts and Sciences.

This Graduate School of Arts and Sciences is inseparably articulated with the College. The courses in which graduate students work are open to undergraduates who are able to keep up with them, and each year a considerable number of men who have completed their work for the bachelor's degree in Harvard College continue in the Graduate School, and, except for the matter of registration and freedom from rules of attendance,

[1] Quincy, *History of Harvard University*, vol. i, p. 517.

they recognize hardly any difference in their standing. It is only the most advanced courses which consist wholly of graduates, and even in these there will be occasionally an undergraduate who is exceptionally far on with his subject.

At the same time, the Graduate School brings to Cambridge great numbers of graduates from many other institutions. In the year 1912-13 it had students from one hundred and forty-four different colleges and universities. These graduate students, who are as a whole the pick of their colleges, bring with them strong intellectual interests and great diversity of point of view. The mingling of such men with each other in the higher courses is one of the chief advantages of a university, and the fact that they are as a body so much amalgamated with the undergraduates is of especial advantage to the latter. Very frequently these graduate students, especially those who come from the smaller colleges, acquire a strong feeling of loyalty to their second Alma Mater. Even in matters athletic, though they are not allowed to play on university teams, they frequently feel themselves Harvard men.

The work in the Graduate School of Arts and Sciences leads to the degrees of Master of Arts, Master of Science, Doctor of Philosophy, and Doctor of Science. The program of study for the degree of Master of Arts "must form a consistent plan of work pursued with some definite aim." For graduates of Harvard College or of colleges of approximately the same standards, one year of residence is usually sufficient to earn this degree. Until within a few years it was the practice to allow men from other colleges who wished for a Harvard degree to register as undergraduates and take the A.B. in one or two years. Now, under a change of

rules, such men are expected to register in the Graduate School and study for the A.M. At Harvard, as elsewhere, this degree tends to become a teacher's degree, especially for teachers in secondary schools. As the standard of these schools improves, the better ones expect their teachers to have some training more advanced than that of the College. The number of master's degrees conferred at Harvard is considerable; of late years it has ranged between 125 and 150.

The requirements for the degree of Doctor of Philosophy or Doctor of Science at Harvard do not differ greatly from those at other leading American universities. They include at least two years' graduate study, one of which must be spent at Harvard, and a thesis presenting the results of an independent piece of research in an unexplored field. In practice three years or more are usually required to earn this degree, after the bachelor's degree. The first two years the student usually gives to advanced courses, covering the whole field which he has chosen for his work. In some of these courses he is always sure to become engaged in research which leads on to a subject for his doctor's thesis. The preparation of the thesis occupies usually a year, and not infrequently more than a year, of hard and concentrated work in the library or in a laboratory, and the thesis must be approved as advancing knowledge. Besides the thesis, the candidate must pass rigorous examinations, usually comprising general examinations on the whole subject in which the degree is taken, and a special test on the special field of study which he has chosen for his own. The training for these examinations is severe and exhausting. At present the tendency at Harvard is to raise the standard for the Ph.D. to a level somewhat higher than that of the Ger-

man universities, and in some departments there is a tendency to approach the standards of the degree of Docteur ès Lettres in France. Not infrequently candidates come up for their examination grievously overworked; but when the President of the University calls for the candidates for the Ph.D. on Commencement Day and welcomes them with the phrase, "Men of learning, I gladly admit you to the great and universal fraternity of scholars," one feels that the reward is sufficient for the labor.

There are a considerable number of scholarships and fellowships attached to the Graduate School of Arts and Sciences. In 1911-12 there were one hundred and twenty-six in all. Of these, thirty-seven were fellowships, with yearly incomes ranging from $400 to $1150; and eighty-nine were scholarships, with incomes ranging from $150 to $450. The fellowships differ from the scholarships, not only in the amount of stipend, but in the increased distinction which they carry, and they are rarely assigned except to men who have already shown high promise in the work for the doctor's degree. John Harvard Fellowships are assigned to students of distinction who do not need a stipend.

Of the endowed fellowships there are twelve which can be used for travel; but besides these a considerable proportion of the income of the Frederick Sheldon Fund for traveling fellowships is usually assigned to students in the Graduate School. Thus it is possible each year for a considerable number of men to go abroad to complete their studies, either under distinguished scholars, or in libraries or laboratories, or in some special field. This year of research is of high value in perpetuating interest in scholarship.

The Graduate School is notably cosmopolitan in tone.

College lines are broken down, and the fellowships and scholarships go quite as frequently to men whose first degree has been taken elsewhere as to Harvard men. There is a strong feeling of fraternity in the School, which was strengthened when a few years ago the Corporation assigned Conant Hall to its students, and fitted up a common room in this building for their use. Here are held the meetings of the Graduate Club, to which all members of the School are eligible, and of the various learned societies, like the Classical Club, the Modern Language Conference, and others in which Faculty and graduate students join. The situation of these societies varies with the departments. In some cases they are officially under the direction of the department; in others professors are honorary members. But almost every department in the School has its own society in which papers, usually of a technical nature, are read and discussed.

At the same time, many graduate students come to Cambridge, as much for the widening of their horizons and for the opportunity to hear good music and to see good plays as for the sake of the study. For many graduates of smaller colleges, who look forward to spending their lives in teaching in small colleges or small towns, these opportunities of cultivation are of inestimable value. The students of the Graduate School show an eager desire to make the best of all the opportunities which are offered them.

Students in the Graduate School of Arts and Sciences return to all parts of the country, a large proportion of them to teach, especially in colleges. In these days the more capable and ambitious men stay long enough to take the Ph.D., which is coming in many colleges to be required, almost unreasoningly, of all in-

structors. The men who have won this degree at Harvard, as at the other principal universities of the country, are picked men, often of high cultivation and ability, and they are rapidly raising the standard of scholarship in the colleges throughout the country. Such men flock to the meetings of the various learned societies in the Christmas holidays, there to meet each other and to talk the shop of their subject and exchange the gossip of their calling.

The history of medicine shows a faint glimmer in the very earliest days of the College, for it is recorded that in 1647 Giles Firmin lectured there on anatomy. On the 27th of October of the same year, there is a vote of the General Court that "it is conceived to be very necessary that such as study physic or chirurgery should be at liberty to anatomize once in four years some malefactor in case there be such." More than a hundred years later, after the burning of Harvard Hall in 1764, the Boston *Postboy and Advertiser* of the 30th of January, notes that among the losses by that fire was "a collection of the most approved medical authors . . . also anatomical cuts and two complete skeletons of different sexes. The collection would have been very serviceable to a Professor of Physic and Anatomy when the revenues of the College should have been sufficient to subsist a gentleman in this character." In 1770 Ezekiel Hersey (A.B. 1728) bequeathed £100 for a professorship of anatomy and surgery, and the next year a number of undergraduates, among whom was John Warren (A.B. 1771), the real founder of the Harvard Medical School, organized the "Anatomical Society, for dissection of animals and studying the bones of the human skeleton." Very clearly, the interest in

medical study was rapidly focusing. Then came the Revolutionary War, which like all wars was a great stimulus to surgical study, and by 1782 the Corporation had organized a plan of systematic medical instruction.

This development of medical education was not unlike that elsewhere in the country before the Revolution. At that period medical practitioners were trained according to the English custom, by reading medicine in the office of an established medical man, helping him in minor operations, and compounding drugs. When they held themselves prepared to set up for themselves, they usually assumed the title of doctor, whether or not they had received the degree of M.D. This was practically an apprentice system. A few of the more ambitious went abroad to study, chiefly in Edinburgh, though to some extent in England, and this system lasted well on towards the end of the eighteenth century.

Medical study seems on the whole to have been more active south of New England. Between 1758 and 1788 it is recorded that sixty-three Americans graduated in medicine at Edinburgh, of whom only one was from New England.[1] The Pennsylvania Hospital was founded in 1751 and the Medical College of Philadelphia, now the Medical School of the University of Pennsylvania, in 1765.

The Revolutionary War gave a great impetus to the study of medicine in Boston. Dr. Joseph Warren (A.B. 1759), who was killed at Bunker Hill, was a physician of brilliant promise. His younger brother John, who had studied with him, had some opportunity during the war for dissection, and in 1780 gave a course on anatomical demonstrations to medical men at the Mili-

[1] T. F. Harrington, *Harvard Medical School*, vol. i.

tary Hospital in Boston.[1] In 1780 was organized the Boston Medical Society, and from this sprang Dr. John Warren's proposal to the President and Fellows of a systematic scheme of instruction in medicine under the auspices of the College. The adoption by the Corporation of a report recommending such instruction, September 19, 1782, may be looked upon as the formal foundation of the Medical School. The vote provided for the appointment of professors of anatomy and surgery, of the theory and practice of physic, and of materia medica and chemistry, and for the setting up of a complete anatomical and chemical apparatus, and the erection of a proper theater for dissections and chemical operations "as soon as there shall be sufficient benefactions for those purposes"; and it provided also for a certificate under the seal of the University to be given to students who were qualified to practice. In November, Dr. John Warren was elected Hersey Professor of Anatomy and Surgery, in December Dr. Benjamin Waterhouse became Hersey Professor of the Theory and Practice of Medicine, and the next year Dr. Aaron Dexter (A.B. 1776) was elected Erving Professor of Chemistry and Materia Medica. On October 7, 1783, Dr. Warren and Dr. Waterhouse were inducted into their professorships with much ceremony in the Old Meeting House.

The school thus organized was essentially like those which had already been instituted in Philadelphia and New York. They were what is known as proprietary schools, since the fees received from the students went to the professors, and the professors made all nominations and managed the school. At Harvard a close connection was maintained with the College through the

[1] Harrington, *ubi sup.*, vol. i, p. 1.

endowed professorships, the earliest of which were established in Harvard College. Indeed, the Medical Faculty was not formally organized until well into the nineteenth century, and the Erving Professorship, originally of chemistry and materia medica, is now a professorship of chemistry in the College. The system spread throughout the country and produced many schools which, being run wholly for the profit of their owners, caused grave scandal. But at Harvard, as in all the best schools, the idea of profit had no part in the management, and the professors frequently put back into the school more than they received from fees.

Thus organized in 1782, the "Medical Institution" of the University grew at first rather through the ability of its professors than through independent organization. At first, Dr. John Warren, who was a notable lecturer, gave a course of demonstrations in anatomy in Holden Chapel, which was attended by the whole Senior class of the College; but it very soon became impracticable for him, with his large practice in Boston, to get out to Cambridge by the meager communications then open.

Through the remainder of the eighteenth century medical students attended lectures at Cambridge during short terms in each of two winters, completing in Boston under the direct instruction of some doctor the study in medicine which was required by Harvard for the degree of Bachelor of Medicine. If not a graduate of the College, a student had to qualify in Latin and natural philosophy. The fee for each course in anatomy and surgery was $26.00, which went to the professors.[1]

Very soon, however, it was found impracticable to continue carrying on the Medical Institution of the College at Cambridge and the instruction of medical stu-

[1] Harrington, *ubi sup.*, vol. i, p. 275.

dents was transferred to Boston. In 1810, when Dr. James Jackson (A.B. 1796) was elected Hersey Professor of the Theory and Practice of Physic, there were four professors teaching in the almshouse on Leverett Street in Boston. In 1814, through the help of the appropriation of a bank tax, in which Bowdoin and Williams Colleges shared, the erection of the "Massachusetts Medical College," on Mason Street in Boston, was made possible; and it became the home of the Harvard Medical School in 1816. On November 1, 1816, the Medical Faculty was first regularly organized.

Side by side with the Harvard Medical School, and supplementing its instruction, there grew up certain private medical schools under the charge of members of the Medical Faculty. At this time the regular course in medicine consisted only of four months of lectures in the winter. The private schools gave instruction during the rest of the year, and they gathered the most energetic of the younger doctors. They were in no way rivals of the School, and the Tremont School later was adopted officially as the summer course of the Harvard Medical School. Among the teachers in this Tremont School were Oliver Wendell Holmes, Henry J. Bigelow, D. Humphreys Storer, Louis Agassiz, and Jeffries Wyman, and there were two other private schools manned by younger doctors in close alliance with them.

The records of the Corporation show that for many years it regarded the Medical School as a private school, for which the responsibility lay in the Faculty. The funds of the few professorships were held by the Corporation, who paid the income to the incumbents; but it was expected that this income would be supplemented by the fees received from the students. At the same time the School was always felt to be an integral part of

the University. The Boston of those days was small and there was little differentiation of interests. The officers of the Medical School were practically all graduates of the College, and the families which gave their time and their money to the development of the School were almost always among the most loyal supporters of the College. It is hard to realize to-day how completely Harvard College was a part of the Boston of the days before the war. Thus the Medical School worked out its own salvation under the wing of the University, but with entire freedom.

The succession of men of great ability, originality, and high character is remarkable. The families of Warren, Homans, Cheever, Bigelow, Shattuck, Bowditch, Jackson, all cover long periods of the closest connection with the Harvard Medical School; and there are other families whose connection with it, beginning a little later, promises to be as long and as beneficent.

The first interest of the school was a response to the keen zeal of Dr. John Warren for the development of surgery and anatomy. With the appointment of Dr. Jacob Bigelow (A.B. 1806) to the Lectureship of Materia Medica and Botany, a new interest developed and a great advance was made in the use of medicine and drugs. He had studied in France and came back with the theory of the self-limitation of disease and the consequent comparative uselessness of drugs. He, and Dr. Oliver Wendell Holmes working with him, carried this doctrine to the extreme, expressed by Dr. Holmes's saying: "If all the medicines and drugs in the world except opium and alcohol could be thrown into the sea, it would be a great deal better for mankind but worse for the fishes." Parallel to this development went the advance of clinical study under Dr. James Jackson, a

great general practitioner, who was Hersey Professor of the Theory and Practice of Physic from 1812 to 1836. Another stage in the advance of surgery came with Dr. John C. Warren (A.B. 1797), the son of Dr. John Warren, who succeeded his father in the Professorship of Anatomy and Surgery in 1815 and with Dr. Henry J. Bigelow (A.B. 1837), who was elected Professor of Surgery in 1849: Dr. Warren greatly advanced the study of anatomy, and Dr. Bigelow, who was a brilliant operator, carried still further the advance of surgery. In the middle of the nineteenth century the establishment of a chair in Morbid Anatomy by Dr. George Cheyne Shattuck and the appointment to it of Dr. J. B. S. Jackson (A.B. 1825), and the succession of Dr. George C. Shattuck (A.B. 1831), and Dr. Henry I. Bowditch (A.B. 1838), in turn, to the Professorship of Clinical Medicine (named the Jackson Professorship in 1858), carried still further the study of clinical medicine. In 1847, the appointment of Dr. Oliver Wendell Holmes to the Professorship of Anatomy and Physiology and his interest in microscopic work opened the way for the study of histology. The laboratories of physiology and chemistry also rapidly advanced, especially when physiology was established as a separate subject, and put under the charge of Dr. Henry P. Bowditch (A.B. 1861), who had spent three years in study abroad.

With the increase in the number of subjects which needed expensive laboratories the day of proprietary schools of medicine passed by. A school which should give adequate instruction in medical science could be supported only by great endowments coming from private or public benefactions. There was a general movement, therefore, on the part of the better proprietary schools to attach themselves to universities, and the

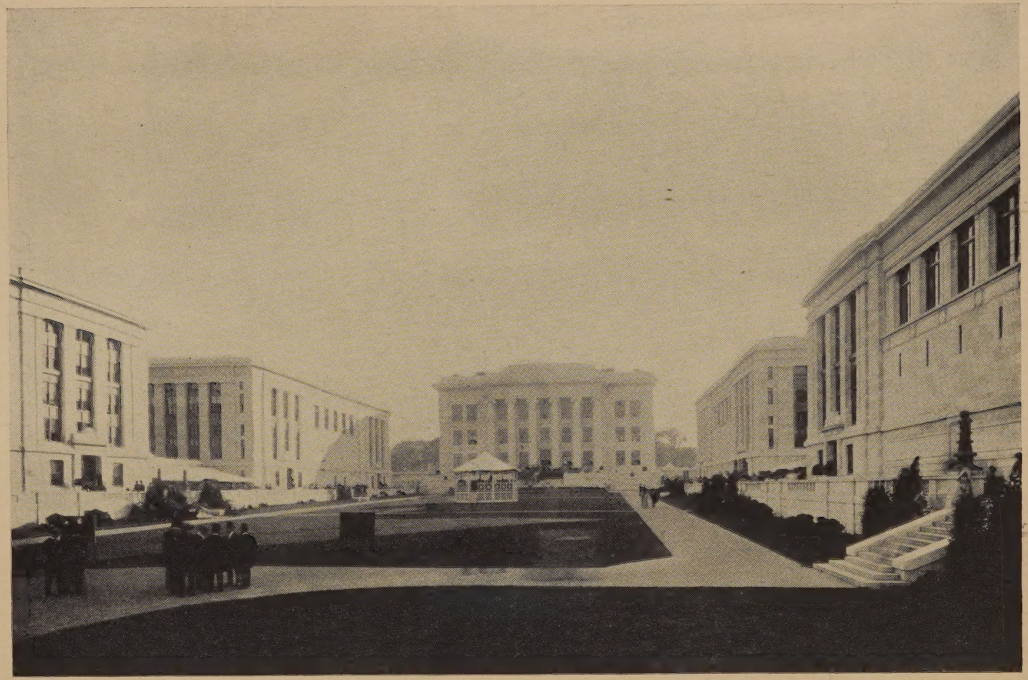
number of university medical schools greatly increased. At Harvard, the result of this development was a closer affiliation with the University, and during President Eliot's administration the Medical School came wholly under the control of the President and Fellows of Harvard College.

The Medical School has had in its history four successive buildings or sets of buildings, not counting the earlier instruction in medicine given first in 1782 in the basement of Harvard Hall at Cambridge and the next year in Holden Chapel, or the temporary quarters on Washington Street in Boston. The first building especially constructed for the School was built in 1816 out of the proceeds of a grant by the Commonwealth of one third of the bank tax for ten years. It stood on Mason Street in Boston, and was named the Massachusetts Medical College, in recognition of the grant from the state. In 1847 the School had outgrown this building, and a new one was built on North Grove Street, near the Massachusetts General Hospital, the great center of medical research in Boston at the time. Within less than forty years this building too was outgrown, and money was raised for a plot of land and a large building on the corner of Boylston and Exeter streets, which was "expected to be the home of Medicine for generations."

The advance of medical science upset all calculations, however, and within less than twenty years the creation of new departments and the need of new laboratories had outgrown the capacities of this building. Accordingly, about the turn of the century, the Faculty of the School and the Corporation began to talk of another new medical school on a scale heretofore unthought of. Some generous friends of the University quietly bought

a tract of twenty-six acres of land at the base of Parker Hill in Roxbury and held it until it should be needed. Then the Corporation sanctioned the launching of the great "Medical School Undertaking." Professor Henry P. Bowditch and Professor J. C. Warren were at the head of a committee which worked out the general lines of a group of buildings which should be large enough to house the many departments of a modern medical school, and in addition should provide space for the establishment of hospitals of various sorts in close contiguity to the School. Then they set to work to raise the ten million dollars necessary for the land, buildings, and endowment.

The enterprise met with gratifying success. Mr. J. Pierpont Morgan offered at once to give the administration building and the two buildings flanking it. Mr. John D. Rockefeller, who was already interested in the advance of medical science, sent one of his counsel to make a careful investigation of the work and the prospects of the School. The report was favorable, and Mr. Rockefeller offered to give a million dollars for the endowment of the enterprise, provided that the balance necessary for the buildings, about three quarters of a million dollars, should be procured from other sources. In a short time the money was raised. Mr. David Sears (A.B. 1874) gave the building of Hygiene and Pharmacology in memory of his father, David Sears (A.B. 1842), and his grandfather, David Sears (A.B. 1807). Mrs. Collis P. Huntington of New York gave the building for Bacteriology and Pathology; and two new professorships were established, the George Higginson Professorship of Physiology and the James Stillman Professorship of Comparative Anatomy. The money thus given, with other subscriptions, exceeded the amount



THE NEW BUILDINGS OF THE MEDICAL SCHOOL

stipulated by Mr. Rockefeller, and the success of the great undertaking was assured. Land was broken in September, 1903, and the buildings were finished in 1906.

The architects were Messrs. Shepley, Rutan, and Coolidge, and the great court enclosed by the five buildings is one of the finest pieces of American architecture. The walls of the laboratories on the court have just sufficient openings to break the surface, and they have been arranged with great skill. Mr. Morgan indicated his preference for marble as the material and paid for the extra expense involved in its use. The simple lines of the group carry the eye up to the façade of the Administration building, with its noble terrace and its five great columns. In the summer, when the green of the grass sets off the soft white marble, this court gives one an idea of the best traditions of Greek architecture.

The arrangements and interior plan of the buildings are calculated to provide the maximum of utility and convenience. Each one, with the exception of the Administration building, is in the form of two wings connected by a central section, so that there is the greatest possible amount of light in the laboratories. The wings of each building can be extended in the future as more space is necessary. An ingenious scheme of " unit rooms " was devised, by which the space in each building can be fitted to the needs of the men working in it, and can be rearranged, if necessary, at comparatively slight expense. The unit consists of a room for research twenty-three feet deep and ten feet wide, with a window. The partitions are of terra cotta, and two or more of these rooms can easily be combined by taking out the partition. In this way rooms of all sizes, from those fitted for a single worker up to moderate-sized laboratories or class-rooms, can be made on each floor of

each wing. In the central section of each building which connects the wings is a large amphitheater, which is thus easy of access to the students and instructors who are working in either wing. In the central section, too, are kept the books and journals which are most closely related to the work being done in that building.

The Administration building, at the head of the court, has on the lower floor a handsome Faculty room and convenient offices for the Dean and the administrative staff. On the left of the entrance is a large lecture-room. In the basement, which is well above ground, are reading and coat-rooms for the students. The entire upper portion of the building is occupied by the Warren Anatomical Museum, which contains a most valuable collection for teaching, begun by Dr. John Warren in 1799.

Close by the Medical School buildings is the new building of the Dental School, the Faculty of which is organized as part of the general Medical Faculty. This building, which was completed in 1909, was made possible by the undaunted belief of President Eliot that dental science is a matter of so great importance to the happiness of mankind that it should have every advantage for scientific study. Under his encouragement, the loyalty and self-devotion of the alumni have carried the day, and partly through the generosity of friends, even more by the self-sacrificing generosity of the graduates of the school, it was possible to erect a commodious building.

It has laboratories equipped with the latest and most approved apparatus, and a large infirmary where free patients are treated under the direction of the instructors in the school. There is also a department for oral surgery, with two operating rooms, each of which has its room for anæsthesia; and there is a small ward for tem-

porary treatment of the cases. There is also a room for X-ray work and a museum containing over 3500 specimens. The Dental School building is used wholly for clinical work; as the lectures and the general laboratory instruction are given in the buildings of the Medical School.

The equipment of the Harvard Medical School, however, is far from being completed within its own buildings. It has now, what every great medical school must have, close connections with a large number of hospitals.

First to be mentioned is the Peter Bent Brigham Hospital, built on land bought in 1900 for the use of the Medical School. This is a great general hospital, with fourteen separate buildings and room for two hundred and forty medical and surgical cases. Its relations with the School are close, for the trustees have entered into an agreement with the Corporation of the University, under which the Corporation will nominate the medical and surgical officers of the hospital. It is thus possible to elect men to professorships and at the same time to ensure them positions in a great working hospital. Besides this, the Corporation has recently concluded an arrangement with the trustees of the Massachusetts General Hospital, by which the house officers of the latter will also be appointed in consultation with the Corporation. Thus another great hospital, with three hundred and twenty beds, is made an integral part of the organization by which the Medical School will carry on the war against suffering and disease. Besides these two great general hospitals, there are others also in close association with the school. On part of the land in Roxbury have been built the Collis P. Huntington Memorial Hospital for cancer cases, the Infants' Hospital, and the Children's Hospital. The Huntington Memorial Hos-

pital is a very complete building with twenty-four beds, and all the accompanying laboratories and facilities for study. It will be conducted under the direction of the Cancer Commission of Harvard University. The Infants' Hospital accommodates fifty babies, and offers facilities for the study of the many problems of the first months of a baby's growth. The Children's Hospital, a much larger institution, has beds for one hundred and fifty patients. It will afford medical, surgical, and orthopedic service for children beyond the age of infancy. Also on the land bought for the School there is the Carnegie Nutrition Laboratory, maintained by the Carnegie Institute of Washington, which has a very remarkable equipment for the investigation of various problems of nutrition, with apparatus by which all the products of the combustion of food for the body, whether in health or in disease, can be accurately measured and studied. Close by is the House of the Good Samaritan, a hospital for women suffering from various chronic maladies. All these buildings obtain their power, heat, and light from a central power-plant belonging to the Medical School, which provides them also with power for ventilation, refrigeration, and electricity.

Besides these buildings, which are on land purchased for the Medical School Undertaking, there are several other important institutions near at hand in which the School has active interest. About a quarter of a mile away is the new State Psychopathic Hospital for the observation and treatment of cases of mental disease in the early stages. Here are brought all persons whose mental state makes it desirable to have them under observation before committing them to the state asylums, and here, too, it is arranged that selected types

of mental disease may be brought from the various state insane hospitals for special study. About a mile away is the Free Hospital for Women, devoted to surgical cases, with sixty-seven beds. In another direction, at about the same distance, is the Baptist Hospital, and the site for the future Robert Brigham Hospital for chronic cases, and there are a few other smaller institutions. Farther away, but in close relations with the Medical School, is the Boston City Hospital, with its many cases of accidents and many operations. There are also the Boston Lying-in Hospital, which has more than eight hundred patients a year, and the Boston Dispensary, to which over one hundred thousand visits are made during the year. The McLean Hospital for the Insane at Waverley, a department of the Massachusetts General Hospital, with over four hundred patients in a year, is well equipped with pathological, chemical, and psychological laboratories. The Long Island Hospital, in Boston Harbor, has three hundred and twenty-five beds designed particularly for the treatment of chronic cases. At the Carney Hospital over three thousand patients are treated during the year, and it maintains, besides, a very large out-patient department.

The School is thus surrounded with hospitals of the most varied sort; so that the opportunities for the study of diseases are unsurpassed. Besides these resources, the neighborhood of the Bussey Institution affords opportunities for study in comparative pathology and in the part played by insects in the carrying of disease. Investigators in the Medical School are also able to call on the physical laboratory and the chemical laboratories in Cambridge for advice and aid in investigations. With the increasing differentiation of science and the establishment of new lines of in-

quiry involving more than one field thereof, these possibilities of coöperation are likely to increase in importance.

The regular work for the degree of M.D. in the Harvard Medical School calls for four years of hard and often almost unbroken study. Under a recent rearrangement of the work, in the first two years the students concentrate their time almost wholly on the laboratory subjects. The first half of the first year they devote to anatomy and histology, the second half to physiology and biological chemistry, and the first half of the second year they give wholly to pathology and bacteriology; in the second half of the second year there is somewhat greater variety. At the end of the second year there is a general examination on all the work of these first two years of laboratory study. In the last two years of the course students enter directly on clinical study. The work of the fourth year is elective. At the end of that year there is another general examination, principally on the work of the last two years.

All through the work of the School, but particularly in the latter portion of it and during the summer, students spend much time in the various hospitals and dispensaries described above. The amount of instruction by pure lectures has been steadily reduced, and the amount of time spent in laboratories or hospitals increased. In recent years successful experiments have been made in borrowing the case-system of the Law School for instruction in medicine. Books are prepared in which typical cases of certain diseases are described in detail; these cases are discussed in the class-room with various modifications suggested by the professor, and the students must reason out the differ-

ence in diagnosis and treatment which would result from such modifications. Thus the medical student, even in his study of books, gets the habit of giving his attention to the actual facts of cases and reasoning out their significance.

The tendency of medicine to develop new fields is illustrated by the new degree of Doctor of Public Health, for which a year's study after the regular medical course is required. There is also provision for the attainment of the degrees of Master of Arts and Doctor of Philosophy for advanced students of medicine who have already received the M.D. These degrees are administered by a Division of Medical Sciences established in the Faculty of Arts and Sciences, with joint membership from that Faculty and the Medical Faculty. The work for these degrees is in the nature of advanced research.

Besides these opportunities for advanced study in Medicine, the Graduate School of Medicine was organized in 1911 as a department under the Faculty of Medicine, with a separate Dean and Administrative Board. The purpose of this Graduate School of Medicine is chiefly to afford opportunities of special study to doctors who are already in practice. It offers courses of lectures and clinical visits covering a month or more, and shorter courses at the hospitals on special subjects, which are intended for practitioners who can get to Boston only once or twice a week. Special courses are also arranged from time to time in particular lines of work. Besides these, there are research courses, in which opportunity is given for graduates in medicine to carry on more or less extensive investigations. The general purpose of this Graduate School, therefore, is double. On the one hand, it will enable the practitioner

who wishes to keep up with the advance of medicine to do so under favorable circumstances, and in the second place it provides for the increasing number of men who are following medicine as a pure science.

There is a large and increasing amount of pure research in medical subjects now carried on at the School. The laboratories are modern and well equipped, and many subjects are opening out new fields. There is also opportunity for experiment on animals under carefully guarded conditions. The Harvard Medical School thus promises to combine the two great modern functions of medical study: on the one hand, the investigation which is constantly advancing the science, and, on the other hand, the passing on of the information thus gained to the men who will apply it directly to the amelioration of human ills.

The Law School, now one of the strongest departments of the University, like most of the other departments, made its first beginning with a professorship in Harvard College. In 1815 Isaac Royall left a bequest to the University for the establishment of a professorship of law, the incumbent of which was required to give a course of lectures to the Seniors. For two years the professorship was filled by Isaac Parker (A.B. 1786), then Chief Justice of the Supreme Judicial Court of Massachusetts. In 1817, at his suggestion, the Corporation and Overseers established the Harvard Law School. It is, therefore, the oldest of the extant law schools of the country. With the establishment of the School, the Corporation elected the Honorable Asahel Stearns (A.B. 1797), University Professor of Law. In 1829, the staff was increased by the foundation of the Dane Professorship of Law, to

which was elected, at the suggestion of the founder, Joseph Story (A.B. 1798), later a Justice of the Supreme Court of the United States.

The School was first housed in what is now College House. In 1829-30 it had thirty-two students. In that year Nathan Dane (A.B. 1778), the founder of the Dane Professorship, gave a new building to the Law School, Dane Hall, which, though somewhat modified in exterior, still stands close to its original position on the curve of Harvard Square. The School increased slowly, though among the professors were men of the highest distinction, such as Joel Parker, later Chief Justice of the Supreme Court of New Hampshire, Emory Washburn, later Governor of Massachusetts, and Nathaniel Holmes (A.B. 1837), later a justice of the Supreme Court of Missouri. The system of instruction was wholly by lectures, for legal instruction, like medical instruction, in the early years followed the model of the English system, which was practically an apprenticeship. Just as the medical student read medicine and helped in bandaging and in compounding drugs in the office of an established practitioner, so the student of law read law in text-books in some lawyer's office and took a gradually increasing part in the regular work of the office, drawing up papers, preparing cases for trial, and finally taking part in the arguments. The instruction in the Law School at first merely took the place of text-books. The students listened to lectures by distinguished practitioners and made notes on them. A large part of Judge Story's famous treatises on the law were produced as lectures in the Law School. The course was nominally two years, but there is said to have been no more work in it than might easily have been done in one. There were no examinations either

for entrance or for graduation, and in comparison with the almost fierce eagerness of professional study to-day, the work of the Law School then would seem amateurish.

With the appointment of Professor Christopher Columbus Langdell (A.B. 1851) to the Dane Professorship and to the deanship of the School, in 1870, a revolution, as we have seen, was wrought in legal instruction. President Eliot, in his address on the Law-School Day of the two hundred and fiftieth anniversary of the College, gives an account of how he came to appoint Professor Langdell. After describing how Governor Washburn, who was then Dean, had received his first visit to the Law School with the semi-humorous declaration that he was the first President of the University who had ever entered its doors, he went on to say:—

The next winter Professor Parsons, one of the veterans of the School, resigned, and the Dane Professorship became vacant. Then I remembered that when I was a Junior in college, in the year 1851-52, and used to go often in the early evening to the room of a friend who was in the Divinity School, I there heard a young man who was making the notes to "Parsons on Contracts" talk about law. He was generally eating his supper at the time, standing up in front of the fire and eating with good appetite a bowl of brown bread and milk. I was a mere boy, only eighteen years old; but it was given to me to understand that I was listening to a man of genius. In the year 1870 I recalled the remarkable quality of that young man's expositions, sought him in New York, and induced him to become Dane Professor. So he became Professor Langdell. He then told me, in 1870, a great many of the things he has told you this afternoon: I have heard most of his speech before. He told me that law was a science: I was quite prepared to believe it. He told me that the

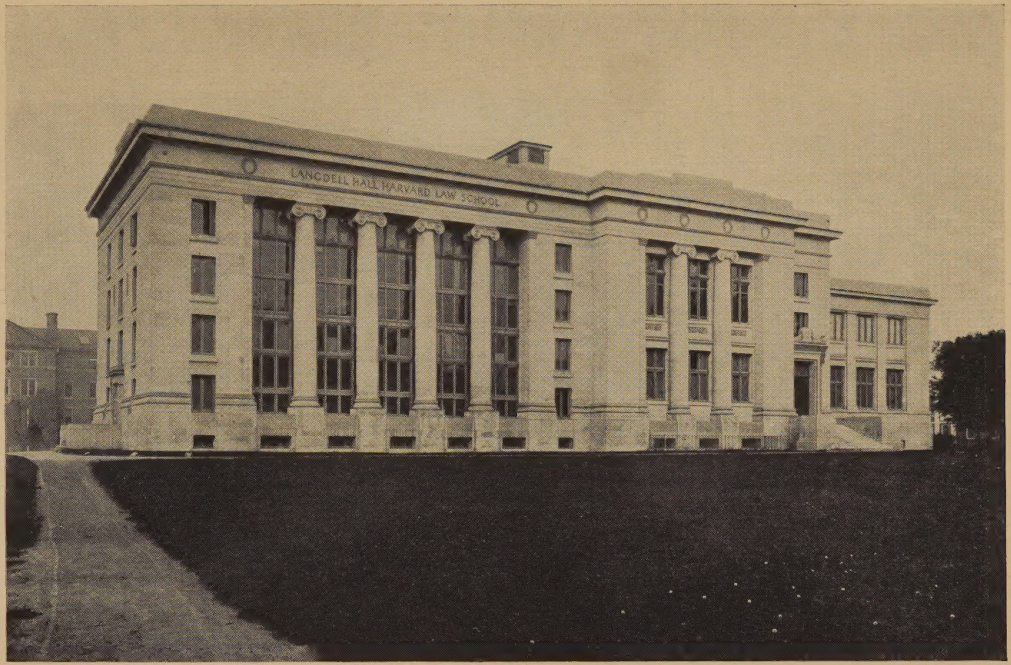
way to study a science was to go to the original sources. I knew that was true, for I had been brought up in the science of chemistry myself; and one of the first rules of a conscientious student of science is never to take a fact or a principle out of second-hand treatises, but to go to the original memoir of the discoverer of that fact or principle. Out of these two fundamental propositions,—that law is a science, and that a science is to be studied in its sources,—there gradually grew, first, a new method of teaching law; and secondly, a reconstruction of the curriculum of the School.

In President Eliot's career he never gave a better proof of his prophetic judgment of men. The study of the law became indeed a science; Professor Langdell invented a wholly new method of teaching law. Instead of letting his students learn the principles from text-books, he sent them to the cases on which the principles were based. For each meeting of a class he gave the students five or six cases from the sets of reports in the Library to prepare themselves on, and then called on one student to state the facts in the case, and on another to state the principles involved in the decision. Then he would draw the whole class into the discussion by seeking their opinion of the decision, by modifying the facts and questioning them as to how the principle would be modified, so that by the end of the hour, the students would have seen that particular principle in all its aspects and would have gone to its foundation in the theory of the common law. Thus he gave to his students a vivid sense of the law as a continuous and living development, and he taught them to think in terms of the common law, rather than to trust to principles committed to memory from a text-book. Of this system, Sir Frederick Pollock, Regius Professor of Law

in Oxford University, declared: "I do feel sure it is the best way, if not the only way, to learn law."

In 1883 a new building for the Law School was erected from a bequest of Edward Austin, from plans drawn by H. H. Richardson (A.B. 1859). It is an excellent example of the Romanesque style introduced by Richardson. The rounded arches at the entrance are elaborately carved, and there is a fine reading-room upstairs with a noble mantelpiece. The building was planned spaciously, with the idea that it would continue to house the School in comfort for a generation, or perhaps half a century; but the success of the School outran the prescience of its Faculty, and within less than twenty years the building was insufferably crowded. In 1908 a new and stately building was erected on Holmes Field just behind Austin Hall, out of the accumulated funds of the School, for the Law School is the only department of the University which puts away a surplus. This new building is appropriately named Langdell Hall. As is the habit at Harvard, the architecture of the new building has no relation to that of the old, though it is in itself commodious and stately.

In the meantime, the standard of the School has been steadily raised. In 1896 a rule was adopted that only graduates of approved colleges and persons qualified to enter the Senior Class at Harvard College should be admitted as students. Three years later, in 1899, the standard was still further raised by requiring a bachelor's degree or its equivalent from everybody who wished to enter the School. At the same time, the standard of work in the separate courses has been considerably increased. The value of the case-system obviously depends on drawing all members of the class



LANGDELL HALL

into the discussion. The Faculty has seen the numbers of the School grow, with great reluctance. They have therefore crowded out without mercy men who are unable or unwilling to keep up with the pace of the School. Even so, however, the numbers are embarrassing. In the year 1911-12 there were 808 students. The difficulty of handling so many has been met in part by dividing the classes into two or more sections under different professors, who from time to time exchange their sections. In this way, instruction for all the men is made as nearly even as possible.

The number of branches of the law in which instruction is given has gradually increased, so that there are now six courses open to first-year students, nine courses to second-year students, and eleven courses to third-year students. Since each man ordinarily takes only four subjects a year, the system has become to some extent elective. In 1911, a fourth-year course was established, leading to the degree of Doctor of Law. This degree, for which courses in Roman Law and the Civil Law are required, is intended for men who wish to ground themselves in the general principles of jurisprudence; it is not expected that it will ever draw very many students.

Side by side with the regular instruction goes the work of the Law Clubs, which is semi-officially recognized by the Faculty of the School. These clubs, which now number about twenty-five, elect eight members each from the incoming class to their Superior Court; the Supreme Court consists of the same number of men from the second-year class. The latter prepare cases on doubtful and interesting points of the law, which are assigned to the first-year men to argue, there being usually two counsel to a side. They prepare their cases

by going through the reports for all the cases which bear on the point, and then argue out their side before the upper classmen. Occasionally a professor will sit with the student judge. The judges, after hearing the arguments, read the briefs and prepare a formal judgment on the case.

Besides these Law Clubs, which usually contain the pick of the students in the School, the Faculty have at various times arranged for moot courts, in which a professor goes over the case and sits as judge of the contests between the various clubs. The work of these clubs and of these cases before the Faculty is a serious addition to the amount of work undertaken by the students, but it is held by the Faculty to be of the highest value, in that it makes it necessary for a student to hunt through the many collections of reports just as he will do when he gets into practice and has to argue a case for himself before a real court. He is thus made familiar with the various collections of reports not only in the United States but in England, and he learns to make such use of them as a lawyer must make in actual practice.

There are a number of scholarships at the disposal of the Faculty of Law, at present forty-three. Besides these there are the four Sears prizes of $375 each, which are awarded without regard to pecuniary means to the four students in the School who have done during the year the most brilliant work.

The library of the Law School is one of the great ornaments and one of the great assets of the University. It is believed to be now the largest single collection on the law and the history of the law. In 1912 it consisted of 148,000 volumes and 14,000 pamphlets. It has an unexcelled collection of decisions of the courts

of all the countries which live under the Common Law, including the colonies of the British Empire. Besides these, it has great collections in Roman law and in Civil law, and with the recent addition of the Olivart collection of books on the History of International Law, made by the Marquis Olivart of Madrid, it has the largest collection on this subject which has yet been made. Some years ago before these recent additions, Professor Dicey of Oxford declared that "the Library had the most perfect collection of legal records in the English-speaking world."

The success of the School and its hold on the country is remarkable. In 1913-14, out of 695 students, less than a quarter had taken their first degree at Harvard, and in the list 142 colleges were represented. The interest in the work is intense, and the competition keen, for, apart from the proved value of the training in preparing men to practice law, it is doubtful if anywhere else there can be found a more stimulating and rigorous mental gymnasium than is provided in the classes of the Law School.

Though the formal history of the Divinity School does not begin until the organization of the Faculty of Divinity, in 1819, practically the history of instruction in theology begins with that of Harvard College. The "Laws, Liberties, and Orders of Harvard College," drawn up by President Dunster in 1642, had as the second article: "Everyone shall consider the main end of his life and studies to know God and Jesus Christ which is Eternal Life"; and the examination on which the first degree was based covered "ability to read the original of the Old and New Testaments into the Latin tongue, and to resolve them logically." A large pro-

portion of the early graduates were ministers. Furthermore, the first professorship established at Harvard College was the Hollis Professorship of Divinity, founded in 1721.

Even in the eighteenth century, when the theocracy had broken down as a practical method of government, and the interests of this world had forced themselves into the affairs of men and into the instruction of the College, instruction in religion was still counted as the chief substance of education. The great controversy which raged over the liberalizing of the College early in the eighteenth century had as one of its chief points of strife the duty of the President to give daily expositions of the Scripture to the students. But even the most liberal men of the time, all through the century, whether belonging to the Puritan churches or to the Episcopal church, which was making rapid headway in Boston, agreed that young men should be trained first of all in religion. All through the first two centuries of the history of the College, therefore, preparation of young men for the ministry was assumed as part of its regular work. Their instruction they received not only as undergraduates, but also as graduates, reading under the Hollis Professor of Divinity.

Gradually, however, other interests more and more surpassed theological interests, and it became clear by the beginning of the nineteenth century that Harvard College was to be a layman's college. At the same time, the Unitarian scission in the Congregational church, about the beginning of the century, produced a new and very lively interest in theology, and this interest reacted on the instruction in divinity. Dr. Henry Ware (A.B. 1785), one of the most eminent of the early Unitarians, was elected Hollis Professor in 1805,

and in 1811 began systematic instruction of resident students in theology. Six years later, in 1817, this instruction attracted enough students to make it worth while to have public exercises for their graduation. In 1819, the Corporation and Overseers authorized the Hollis Professor of Divinity, the Hancock Professor of Hebrew, the Alford Professor of Natural Religion, Moral Philosophy, and Civil Polity, and the Dexter Professor of Sacred Literature to organize themselves as a Faculty of Divinity.

The Divinity School was the first of the professional schools of the University to become a graduate professional school. Thus organized, the School was intended to be a Unitarian seminary, and it was recognized as such. Nevertheless, as early as 1830, when the Society for Promoting Theological Education at Harvard University, which consisted wholly of Unitarians, turned the funds over to the President and Fellows, they made the condition that no "assent to peculiarities of any denomination of Christians shall be required of either the instructors or students." In spite of this liberal proviso, the School from natural causes long remained Unitarian, and it was not until the latter quarter of the nineteenth century that any considerable number of ministers were prepared for other denominations.

Under President Eliot, as we have seen, the School early raised its professional level. In 1882 it became strictly a graduate school, and no candidate was admitted to study for the degree who had not received the degree of A.B., or its equivalent. In 1890 the tuition fee was raised to $150, and the Divinity School was put on a level with the other departments of the University.

The instruction in the Divinity School is more closely interlocked with that of the College than is that in the other professional schools. Since the School provides more instruction than can be covered by any one man in the three years' study required for the degree, it has of necessity adopted the elective system. Many of the forty courses of instruction offered are identical with courses offered in Harvard College and the Graduate School of Arts and Sciences, and most of the others may be taken by competent students in the College or the Graduate Schools. At the same time, all the instruction offered by the Faculty of Arts and Sciences is open to regular or special students in the Divinity School.

The School was greatly strengthened in 1908, when an arrangement was made with the Trustees of the Andover Theological Seminary by which that Seminary was removed to Cambridge and brought into close alliance and coöperation with the School. The Andover Seminary, which has large endowments, has built a beautiful stone building on land near the building of the Divinity School. Here the libraries of the two institutions have been merged in one, making a joint collection of over 100,000 volumes and nearly 50,000 pamphlets. The instruction also is merged; and professors on the Andover foundation are elected Andover Professors in Harvard University.

The economy of the arrangement is obvious. There are many subjects of instruction in a divinity school, such as Hebrew, and Old Testament criticism, to go no further, which can in no way be affected by theological differences. Thus the joint Faculty of the two institutions can be diversified by providing for instruction and investigation in a greater number of subjects

than would be possible if each school had to maintain a complete staff for all the fundamental subjects.

The ambition of the Harvard Divinity School to be a non-sectarian institution for " the serious, impartial, and unbiased investigation of Christian Truth " is unquestionably successful. In 1913-14, among the fifty-seven students in the Harvard Divinity School and the Andover School fifty-one different colleges and sixteen theological seminaries were represented. Within thirty years students of the School have entered the ministry of eleven different denominations. In the Faculty at present there are Unitarians, Orthodox Congregationalists, and Baptists. There are no theological tests or requirements, though it is provided that a professorship of theology shall always be held by a Unitarian. So far as it is possible, however, under conditions as they now exist, the Harvard Divinity School has accomplished its aim of being undenominational.

The history of technical and scientific education at Harvard goes back more than two generations, to the foundation of the Lawrence Scientific School and the endowment of the Bussey Institution. In 1847 the Corporation and Overseers announced their intention of offering instruction in applied sciences for mature students, and the Honorable Abbott Lawrence made possible the immediate establishment of the work by his gift of a building and of a fund for a professorship. This school was intended to give instruction in both pure and applied science. The endowment of the Bussey Institution was provided by a will written in 1835 by Benjamin Bussey (A.B. 1803). He died in 1842, but as the estate was subject to annuities, the

School of Agriculture and Horticulture, for which he provided, was not organized until 1871. The will, which was written more than thirty-five years before the passage by Congress of the Morrill Act, which established the state agricultural colleges, was half a century in advance of the times. The fortunes of the Bussey Institution will be dealt with separately.

The Lawrence Scientific School in the first years of its career gathered together a remarkable set of students, a large proportion of them already Bachelors of Arts. The four members of the first class which was graduated were William Louis Jones, who became Professor of Physics, Chemistry, and Agriculture at the University of Georgia; Joseph Le Conte, who was professor of scientific subjects successively at the College of South Carolina, the University of Georgia, and the University of California, and was a member of the American Philosophical Society and of the National Academy of Sciences; John Daniel Runkle, who was professor at and President of the Massachusetts Institute of Technology; and David Ames Wells, the distinguished economist, who received a D.C.L. from Oxford, and was a fellow of the American Academy and corresponding member of the Institute of France. Among other early graduates were Francis Humphreys Storer, long Dean of the Bussey Institution; Alexander Agassiz; James Mason Crafts, at one time President of the Massachusetts Institute of Technology; Simon Newcomb, whose honors occupy a whole column in the Quinquennial Catalogue; Daniel Cady Eaton, Professor of Botany at Yale; John Williams Langley, of the Smithsonian Institution; Alpheus Hyatt, professor at the Massachusetts Institute of Technology and at Boston University, Vice-President of the American

Academy, member of the National Academy and other societies; Frederic Ward Putnam, for many years Peabody Professor of American Archæology and Ethnology, and Curator of the Peabody Museum; Samuel Hubbard Scudder, a distinguished entomologist; Nathaniel Southgate Shaler, later the beloved Dean of the School; Cleveland Abbé, Professor of Meteorology in the United States Weather Bureau; Alpheus Spring Packard, long Professor of Zoölogy and Geology at Brown University, and a member of many foreign societies; Edward Charles Pickering, Director of the Observatory; John Trowbridge, Rumford Professor, and Director of the Jefferson Physical Laboratory; Professor William Morris Davis, Dr. Harvey W. Wiley, and many others. No department of the University, or, it is probably safe to say, of any university in America, has graduated so large a proportion of men who reached high distinction in later life.

Gradually, as has been stated, after the War the character of the School changed, and by the eighties it had so run down as to be not much more than an annex to the College, which harbored students whose desire for the cheer and good-fellowship of college life surpassed their intellectual zeal or capacity. The requirements for entrance and the minimum standards of work were low, and the instruction, though of good quality, was small in amount. Nevertheless, even at its lowest estate, when the classes had sunk to three or four students and the number of degrees in technical science had almost vanished, each year there were graduated men who have made excellent records for themselves in scientific work. With the beginning of the last decade of the last century, the number of students began to increase, and by 1900 it had run up to more

than five hundred. Then, in 1906, the School was reorganized and transformed into a graduate professional school. In 1910, with the graduation of the last candidates for the S.B. registered in the Lawrence Scientific School, the School disappeared from the index of the University Catalogue.

This reorganization was the immediate result of the great endowment for study and research in applied science made by the will of Gordon McKay, who did so much to perfect shoe machinery. His bequest, which is approximately $5,000,000 in amount, he tied up so ingeniously and so intelligently as to insure a long and steady increase in the resources of the Graduate Schools of Applied Science. He had provided for his children in his lifetime; and in his will, after creating certain small annuities which were likely to run for many years, he provided that the income of his estate should accumulate until it amounted to a million dollars. This sum was then to be paid over to the University to be used as capital. Thereafter, each year, eighty per cent of the income of the estate was to be paid to the University, again to be used as capital; this will continue until the annuities lapse. Thus the School of Applied Science which he wished to provide for was sure of making a start with a liberal endowment, and then was sure of a steady, liberal increase in that endowment for many years to come.

In view of this bequest, the governing boards in 1906 reorganized the instruction in applied science on a new basis, which brought engineering in its various branches into company with the other learned professions by basing the technical profession of the engineer on an education such as is given by a good American college. It was provided accordingly that the new Graduate School

of Applied Science should be open only to holders of a bachelor's degree; and on top of this preliminary education, the technical work for the degree in applied science was to occupy two years. Thus the degree of A.B. and a technical degree can together be obtained in six years, or, by students who can accomplish their undergraduate work in three years, it can be obtained in five.

In 1912 a further step was taken by which this Graduate School of Applied Science was reorganized into a group of Schools of Applied Science, under a single Faculty. At the same time, a clearer line was drawn between undergraduate and technical study. Up to that time, the future engineer or architect could put a good deal of strictly technical work besides mathematics and science into his undergraduate course. With the reorganization, all the strictly technical courses were transferred to the Graduate Schools of Applied Science, leaving in Harvard College only such courses preparatory for engineering as might properly be maintained in any well-developed undergraduate curriculum.

The students in the Graduate Schools of Applied Science are expected to come to their work with their general preparation in mathematics and science completed. Then for two whole years they work practically without intermission. In the summer, work is carried on either in the shops and laboratories in Cambridge or at the engineering camp at Squam Lake, New Hampshire. The students in these Schools of Applied Science have only two weeks of vacation in the two years, outside the regular University recesses at Christmas and in the spring. By such continuous work men who are matured by a college training, and are welded together

by a common concentration of interest can get a thorough technical training in the two continuous calendar years. The habit of intense work for a long period is not the least important part of the training which they get from the School.

Under this new organization instruction in applied science is given in Graduate Schools of Engineering, Mining, Architecture and Landscape Architecture, Forestry, and Applied Biology, the last at the Bussey Institution. The work in the School of Engineering leads to the degree of Master in Civil Engineering, in Mechanical Engineering, or in Electrical Engineering; that in the Graduate School of Mining to the degree of Mining Engineer or Metallurgical Engineer; the work in the School of Architecture and Landscape Architecture to the degree of Master in one or the other of those subjects; the work in the School of Forestry to the degree of Master of Forestry; and that in the School of Applied Biology to the degrees of Master of Science and Doctor of Science. The degree of Master of Science may also be given in special fields of applied Science, in Physics or Geology, for special work. All the schools may confer the degree of Doctor of Science on conditions similar to those prescribed for the degree of Doctor of Philosophy in the Graduate School of Arts and Sciences.

The School of Engineering has at present a good equipment in Pierce Hall; and there is now under construction a special building for instruction and research in high-tension electricity, which will have apparatus for the production of currents of electricity of extreme power. Students in electrical engineering also have the advantage of the electrical laboratories in the Jefferson Physical Laboratory. The work in the Grad-

uate School of Engineering is distributed among courses in civil, mechanical, electrical, and sanitary engineering. The laboratories for civil, mechanical, and electrical engineering are in Pierce Hall. Here there are large drafting rooms and a library containing more than eight thousand volumes, with over one hundred technical journals regularly on file. There are laboratories for applied mechanics and for the study of heat-engines, for the study of cement and concrete, and for the testing of iron, steel, and other structural materials. There is also a hydraulic laboratory, which has facilities for testing the flow of water under different conditions; and the work in this laboratory is supplemented by work done at Lowell, Massachusetts, on the water-power there. For electrical work there are in Pierce Hall laboratories for carrying on tests and making electrical measurements, and a laboratory with an equipment of various types of direct and alternating current apparatus. There is also a laboratory for the study of problems in illuminating engineering. The laboratory in sanitary engineering is equipped with apparatus for making analyses of air, water, and sewage, both chemical and biological, and for experimental work relating to sewage and to purification of water. The shop-work courses are given during the summer at the Rindge Technical School of the city of Cambridge. Here students get practical work in blacksmith shop, pattern shop, and machine shop.

The surveying courses are carried on, also during the summer, at the Harvard Engineering Camp on Squam Lake, New Hampshire. Here the University owns 700 acres of land, with buildings for class-rooms and drafting rooms. The students and instructors live in tents, and have their meals on a covered piazza. The

life is a simple outdoor life, with plenty of hard work. The Camp is in session for thirteen weeks every summer, beginning immediately after Commencement. The instruction consists of courses in the different branches of surveying, and railroad engineering, also in elementary mechanics, mechanical drawing, descriptive geometry, and other subjects necessary for an engineer. Much of the work in sanitary engineering is also carried on at the Engineering Camp, especially the study of the physics and biology of lakes and reservoirs, and the other subjects which are included under the name limnology,—the science of lakes and reservoirs. The life at the Camp is thus an agreeable combination of hard work and outdoor life, with a chance for swimming and boating in what time there is left over.

The Graduate School of Mining carries on its work in the Rotch Building on Holmes Field, which has a laboratory for metallurgical chemistry and metallography, and also the three laboratories given in memory of John Simpkins (A.B. 1885), for experimental work in ore-dressing, and in assay and metallurgical work. Each of these laboratories is well equipped with modern machinery and outfit for analyses.

The School of Architecture and Landscape Architecture is most fortunately and adequately equipped; for it has Robinson Hall and the generous and complete endowment which came with it, given in memory of Nelson Robinson, Jr., of the Class of 1900, who died during his college course. The building is as complete as it was possible to make it, and with it goes a Nelson Robinson, Jr. Professorship of Architecture and a Nelson Robinson, Jr. Travelling Fellowship in Architecture. The building has excellent drawing-rooms, well

lighted from the north, and a library of over fifteen hundred books on Architecture and over one thousand on Landscape Architecture. It has, besides, a collection of eleven thousand photographs of architectural subjects. The entrance hall is two stories in height, and here are installed full-sized casts of columns and other large architectural elements. Casts of other architectural features, such as doorways, balconies, and window frames, are used as parts of the building. There is also an interesting collection of original fragments, chiefly marble, of Greek, Roman, and Italian Renaissance detail, built into the walls, both inside and outside.

Landscape architecture, though it is treated as a branch of design closely related to architecture, yet dips into a great variety of other subjects. Students in landscape architecture study topographical surveying at the Engineering Camp at Squam Lake, and they get instruction in horticulture and arboriculture at the Botanic Garden and the Arnold Arboretum. The work in drawing and the lectures in practice and design are carried on in Robinson Hall.

The School of Forestry has its main establishment at the Harvard Forest in Petersham, eighty-five miles west of Cambridge. Here, through the generosity of Mr. John S. Ames, '01, and other friends, the University has two thousand acres of land, most of it well wooded, with trees in all stages of growth. There is a fine growth of large pine, and some of the land is in open ground, which affords the chance for instruction in reforestation. The land is varied in contour and in surface, and lies in a region of high hills long famous for its beauty. Here the students spend almost half

of their two years' course, living a semi-camping life, going about in flannel shirts, and taking the life of a woodsman as it comes. Before the end of his course each student must also spend two months in actual lumbering operations in a commercial undertaking.

The history of the Bussey Institution has been long and varied, and, until the organization of the Graduate School of Applied Biology, in general unfortunate. The funds did not become available for setting up the School of Horticulture and Agriculture provided for by Mr. Bussey until 1871, and the next year the great Boston fire swept away a large part of its income-bearing endowment. Though a great subscription was raised to restore the endowments of the other departments of the University which had suffered by this catastrophe, nothing was done to help the Bussey Institution. Moreover, it was in advance of its time, and even the agricultural colleges of the West were still languishing. Its land was ill-fitted for its purpose, and became more so each year as the city grew up around it. The small number of Bachelors of Agriculture who appeared each year on the platform at Commencement were received with hardly disguised amusement. For many years the Bussey Institution thus ran along in a state of suspended development.

About the time that the Lawrence Scientific School was reorganized into the Graduate School of Applied Science, a change had occurred in the officers of the Bussey Institution, and Dean Sabine, who had just been appointed to take charge of the new work in applied science, proposed to the Corporation that the Bussey Institution should be added to it and made the seat of a Graduate School of Applied Biology for advanced re-

search in agricultural and horticultural science. Their consent obtained, he drew on the Faculty of the Medical School and the Faculty at Cambridge, and with the addition of two or three new appointments, made up a Faculty which for study in comparative pathology, in heredity and genetics, both animal and plant, and in applied entomology, is practically unexcelled in the country.

The work of the Bussey Institution is carried on in the buildings at Forest Hills, which were erected on the original foundation. Here are kept the guinea-pigs, mice, rabbits, and other animals, whose pedigrees are recorded in some cases for many generations. In the adjacent greenhouses and experiment beds are carried on similar experiments in the breeding of plants. The work in economic entomology and in plant-breeding has also the advantage of the plantations in the Arnold Arboretum, which were established on part of the Bussey land. For many years the Bussey Institution has provided the Massachusetts State Board of Health with the supply of antitoxin for diphtheria.

It is not expected or intended that the number of students at the Bussey Institution shall at any time be large; but it is hoped that as the work develops, mature students who have already had a good scientific training will be drawn there from the agricultural colleges throughout the country, for advanced research, and that the results of the research carried on there will be applied practically in these agricultural colleges.

The aim of all these Schools of Applied Science is to turn out practitioners, as well as teachers, but practitioners who will go on to their practical work with a large outlook. Through the close relations of the various departments of pure science throughout the Uni-

versity, the spirit of disinterested research will be nourished and kept strong. In the instruction in electrical engineering, for example, it is a great advantage to the students to have part of their instruction given by professors of the Department of Physics whose interest is in research and pure science; and the close relation between the Department of Sanitary Engineering and the course in the Medical School which leads to the degree of Doctor of Public Health obviously reacts favorably for both sides. A professional spirit in the best sense of the word will be cultivated and strengthened by this intimate association of men whose energies are given wholly to the disinterested search for new knowledge with men who are actively interested in applying new knowledge to the bettering of the conditions of life.

The latest graduate school to be established at Harvard is the Graduate School of Business Administration. For a good while observers in this country have noted that the line of demarcation between business and the professions has been fading away. With the increase in the complexity and magnitude of business enterprises all through the last generation, more and more business men had to face their problems with the same faculties of trained observation and reasoning, and the same amassing of facts, which had been so productive in medicine and other sciences and in engineering. For many years large business enterprises of various kinds have had professional statisticians in their offices. Clearly the way was preparing for research in business to take its place beside research in other forms of activity.

Accordingly, after careful discussion, a fund was

raised in 1908 to guarantee for five years the maintenance of a Graduate School of Business Administration. For Dean of the new school, the President and Fellows selected Professor Edwin Francis Gay of the Department of Economics, who had made wide and profound studies in economic history; and a Faculty was appointed of men who had been trained in the science of economics, but whose interests had led them to the practical side of the subject. Some of them after their appointment were given leave of absence, in order that they might collect material and further equip themselves by travel or by practical experience in large business enterprises. The Professor of Transportation came to the School direct from the office of a large railroad, and he had already served in various capacities on three other railroads. Other courses were laid out in which the lectures were to be given by men actually engaged in business; and for these courses business men at the head of great enterprises readily offered their services. They are under the general direction of a regular member of the staff, who prepares beforehand a scheme of the lectures and assigns the topics to each of the lecturers; and he is responsible for arranging for the work of the students and for the examinations.

Not only in these courses, but in almost all the others in the School, it was necessary to invent methods of instruction. There were no precedents; for instruction in business affairs on a graduate basis was new. It was decided that the instruction should so far as possible follow what is known as the problem method: that is to say, that facts drawn from actual business affairs should be put before the students for study, and should then be discussed in the class, so that the students

should work out for themselves, under the guidance of the instructor, the principles which should be applied to the facts. The system follows, with some necessary changes due to the difference in the material used, the case-system of the Law School, which, as we have seen, has also been adopted for use in the Medical School. It has proved both practicable and effective in the Graduate School of Business Administration. The object of this method of instruction is not to load up students with great bodies of facts, but rather to train them to collect facts for themselves, to adjust these facts, and to reason out from them principles on which practical action in business can be based.

Each student in his second and final year in the School, as an important part of the work on which the degree is conferred, must present a thesis in the form of a report on some going business concern. To enable students to collect the material for these reports, many business concerns have freely and generously opened their books to the students of the School. The reports are expected to be thorough and practical. One such report dealt with the organization of a large department store, and the head of the firm, after reading the report, adopted some of the suggestions which were made in it, and offered its writer a good position in his establishment. There seems to be every probability that the School will have no difficulty in finding material for its students to work on; for the interest of business men in the methods and objects of the School has been more than cordial.

One of the main objects of the School is to collect material for research and study, and it has already in its archives considerable collections of reports of corporations and files of official papers. In addition, it

has already received much material to be used confidentially and under fixed conditions: in some cases not at all for a fixed number of years; in other cases only by the Dean of the School or by his personal permission. As business comes to be organized on an increasingly large scale, it becomes less private. Moreover, always, as the generations pass, the necessity of privacy for records fades away.

It is probable that this research into the actual conditions of business will react on the science of economics. That science in the past has proceeded largely by *a priori* reasoning, and its principles have tended to be theoretical and sometimes metaphysical. The principles on which the work of this School is based are essentially those of a science, under which business research will work towards economic principles by first gathering the facts, and then generalizing from them.

The School now has seven departments, and it is possible that more may be added in the future. The seven departments in which instruction is now given are Accounting, Commercial Law, Commercial Organization, Industrial Organization, Banking and Finance, Transportation, and Insurance. Among the courses in Industrial Organization are special courses on printing, which were established at the request of the Boston Society of Printers.

The Graduate School of Business Administration is almost as closely related with Harvard College as are the Graduate School of Arts and Sciences and the Graduate Schools of Applied Science. Several of the Faculty of the Business School also give instruction for undergraduates, and certain courses offered by the Faculty of Arts and Sciences are necessary preparation for the courses in business. The offices and lecture-rooms of the

School are in the College buildings, and all the privileges of the University are open to its students.

With the graduate schools of the University, it will be convenient to describe Radcliffe College and the work of University Extension. Though they are establishments of quite different character from each other and also from the graduate schools, they have this in common with each other and with some of the graduate schools, that they both make use of the services of the Faculty of Arts and Sciences.

Radcliffe College is affiliated with the University, though it has its own corporation and administrative officers, and its own separate funds, administered by its own officers. Its purpose is to provide for the instruction of women by professors and other instructors in Harvard University.

Its history goes back to 1879, when Professor J. B. Greenough, Professor F. J. Child, and Professor W. W. Goodwin became interested in giving advanced instruction to a young woman who had come to Cambridge for the special purpose of receiving it. At the suggestion of Mr. Arthur Gilman, this instruction was extended and systematized, and a committee of ladies in Cambridge, under the lead of Mrs. Louis Agassiz, raised a small sum to provide for such instruction for four years. The essential character of the scheme was that the instruction should be of the same grade as that given in Harvard College, and that it should be given by instructors in Harvard College. Thirty-seven professors and instructors offered courses.

The plan was so successful that in the third year a corporation was formed under the title of "The Society for the Collegiate Instruction of Women," to

carry on the work. It became popularly known as the Harvard Annex. By 1885 there were fifty-five students, and money was raised to buy the Fay House on Garden Street, close to the Washington Elm; and the Annex prospered greatly. In 1894 there were two hundred and fifty students, one hundred of them in a regular undergraduate course parallel to that of Harvard College, and leading, like it, to the degree of Bachelor of Arts. The plan was now beyond the stage of experiment, and in 1894 the Society for the Collegiate Instruction of Women was transformed, by an act of the General Court of Massachusetts, into Radcliffe College, with authority to confer all the honors and degrees conferred by any other university or college in the Commonwealth, subject to the approval of the President and Fellows of Harvard College. Under this act, the President and Fellows of Harvard College became the Board of Visitors of Radcliffe College, and the President of Harvard College countersigns its diplomas and affixes to them the seal of Harvard University.

The government of Radcliffe College under this act consists of a Council of ten members and a Board of Associates of twenty-six members, with an Academic Board, which performs the duties of a faculty, consisting for the most part of professors in Harvard University. The Chairman of the Academic Board must always be a member of the Faculty of Arts and Sciences in Harvard University, and his appointment is subject to the express approval of the Board of Visitors.

The instruction now offered by Radcliffe College is practically identical, within its limits, with that offered by the Faculty of Arts and Sciences at Harvard. Wherever it is possible, the courses are given by the same men; where that is not possible, the choice of the

instructor at Radcliffe is in practice subject to the approval of the instructor in the corresponding course at Harvard. The chief difference is that the number of courses offered at Radcliffe is smaller than at Harvard: in the year 1913-14 they numbered ninety full and ninety half courses. Of the teachers in these courses forty-nine were professors, thirty-nine associate or assistant professors, and forty-three instructors, lecturers, or assistants in Harvard University. The work provided for graduate students at Radcliffe is either given separately, or, in a good many cases where a course is small in numbers at Harvard, it is opened to competent graduate students at Radcliffe; and to this extent coeducation prevails at Harvard. In 1913-14 there were forty-one courses and forty-two half courses in Harvard thus opened to women.

The equipment of Radcliffe College is rapidly increasing. It has an excellent library building with thirty-two thousand volumes, and this number increases each year. Its students have also the use of the Harvard Library. It has already laboratories of its own for physics, chemistry, and physiology. In other scientific subjects opportunities for work are provided for Radcliffe students in the laboratories of Harvard University. For recitations it has rooms in the Fay House, which has been much enlarged, and in a building on Appian Way, which was formerly a school, and in one or two houses on the grounds, which have been in part made over. Besides these buildings, it has an excellent gymnasium, and the Elizabeth Cary Agassiz House, which was built for the use of the students and has pleasant reception rooms, a lunch-room, rest-rooms, and a theater. The College has already made a good beginning on a system of dormitories on land about one third

of a mile away from the College proper. Here Radcliffe owns nearly 250,000 feet of land and has already four halls of residence, with rooms for one hundred and seventy-two students.

It was at first thought possible that the chief function of such a college as Radcliffe might be to provide opportunities for advanced work for graduate students, but as time has gone on, it has become clear that there is also a place for a college for women with full undergraduate work. There continues to be a large proportion of graduate students, and an even larger number of special students who are admitted under stringent conditions to partial work. There were in 1912-13 seventy-nine graduate students and one hundred and fifteen special students, as against three hundred and fifty-eight regular undergraduates. The graduate students come from a great variety of colleges widely scattered over the country. Radcliffe College confers the graduate degrees of A.M. and Ph.D.

The endowment of the College is growing steadily and now amounts to about $900,000. In the year 1911-12 it received gifts amounting to over $170,000. There are more than forty scholarships already established.

The undergraduate life of Radcliffe follows its own course, with comparatively little contact with that of Harvard College. There are always sisters and brothers in the two institutions, and in such activities as the Dramatic Club, and occasionally in the musical clubs, students from Radcliffe sometimes take part with those from Harvard. What intercourse between the students of the two institutions there is, however, is private and personal. The life of the two in the main runs along without contact.

Another enterprise for the more extended use of the instruction and plant of the University is to be found in the work which appears in the Catalogue under the title "University Extension." This falls under three heads: the Summer School of Arts and Sciences, the University Extension courses, mainly in Boston, and the School for Social Workers. Since 1910 the instruction in University Extension has been put in charge of a dean and administrative board, under the control of the Faculty of Arts and Sciences. Under this organization the work has been strengthened, and new and interesting experiments are being tried.

The experiment in offering instruction to persons other than regular students goes back to 1863, to the University Lectures, which have been already described as a tentative step towards graduate instruction. Between 1863 and 1872 about twenty courses of lectures were given each year, either by members of the Harvard staff or by eminent scholars from outside the University, on Saturdays or in the afternoons. In the fall of 1871 there were one hundred and fifty-five persons in attendance on the fifteen courses then in progress, of whom sixty-five were men and ninety were women. The University Lectures were abandoned, however, in 1872; for they had developed no settled function.

In the summer of 1871 Professor Asa Gray announced special instruction in botany during the vacation for teachers and for students who desired practice in the field. This was the real beginning of the Summer School. The next steps followed rapidly. In the summer of 1873 Professor Louis Agassiz opened the Summer School of Natural History on Penikese Island in Buzzard's Bay. In 1874 Professor J. P. Cooke opened summer courses in chemistry with fifteen stu-

dents; and in 1875 Professor Shaler organized the first course in geology at Camp Harvard, Cumberland Gap, Kentucky. No new subjects were added to this list until 1887. Up to this time there was no regular organization of the summer courses.

In 1887 President Eliot appointed the first committee to have charge of the summer courses, with Professor Shaler as its chairman. This committee was not a committee of the Faculty of Arts and Sciences, however, and it was not until 1891 that the summer courses were formally recognized by that Faculty. Then certain of the courses given in the Summer School were accepted towards the requirement for degrees. From that time on the Summer School grew rapidly. The attendance reached its maximum in 1903, when the National Education Association met in Boston, and the Summer School had 1186 students. The normal attendance seems to be about eight hundred students, though there is some fluctuation. In 1900 twelve hundred Cuban teachers were brought to Cambridge by a popular subscription, to receive instruction in English and other subjects.

At present about half of the students at the School are women, and the greater part of them are teachers. A number of the summer courses are accepted as half courses towards the requirements for the degrees of A.B. and S.B.; but an undergraduate in Harvard College is not allowed to count in this way more than one summer course each year. The staff of the Summer School is largely recruited by professors from other institutions, most of whom have been students at Harvard and hold a Harvard degree.

The work of the students in the Summer School is eager and enthusiastic. Such a school draws from the

most ambitious of the teachers, and they come both for refreshment and for improvement. Teaching in the Summer School is inspiring, but at the same time exhausting; for the students are determined to get the last drop of virtue out of their instructors. The value of the work in this, as is other summer schools throughout the country, is unquestioned.

Besides the regular instruction, there is large provision made for lectures and reading, and for excursions to museums and to places of historical interest in the neighborhood of Cambridge. Many of the students come from the West, and are eager to see all that can be seen of an ancient part of the country. The work is for them a change, and they are eager to make the experience as rich as possible.

The second division of the work in University Extension is carried on by Harvard University in coöperation with Tufts College, the Massachusetts Institute of Technology, Boston College, Boston University, the Boston Museum of Fine Arts, Wellesley College, and Simmons College. Each of these institutions takes part in the instruction, and the courses which are offered are of full collegiate grade, and correspond closely in subject-matter, methods of instruction, examinations, and scale of marking, with courses regularly offered by the several institutions. The total number of courses offered by all the institutions combined is considerable. In the year 1913-14 there were five of these courses offered by professors and instructors from Harvard.

These courses in University Extension are in part supported by the Lowell Institute, a large foundation for the support of lectures and free instruction, established in 1839 under the will of John Lowell, Jr., of which President Lowell of Harvard is at present the

trustee. The courses supported by the Lowell Institute include the courses of the Teachers' School of Science.

The lectures in these University Extension courses are chiefly given in the evening, for the sake of persons who are working through the day, and are given mostly in the halls of those of the coöperating institutions which are in Boston.

The work in these courses and in the Summer School counts towards the degree of Associate in Arts, which is conferred on persons who have done a total amount of college work equivalent to that required for the degree of A.B., with the exception of the entrance examinations. This work may be distributed over a number of years. It is planned particularly for the benefit of teachers who wish to improve their positions, and is practically equivalent, except for the requirement of residence, to the Bachelor's degree.

The Commission of the coöperating institutions has been in operation so few years that it is hard to say at present just what the developments are likely to be. The number of students in the three years, including 1912-13, in which the Commission has been organized, has averaged over eight hundred. Obviously, it will need some years of experiment before the scheme can reach its greatest usefulness.

The third division of the work in University Extension is more special. The School for Social Workers was established in Boston in 1904 through the coöperation of Harvard University and Simmons College, for the study of various forms of social service, including charities, correction, and neighborhood work. It is particularly intended to train persons to become officers of institutions or agencies, or to be more efficient volunteer workers.

The usual course covers a year, with two-hour exercises on five mornings of the week. The work fits in with that of the Department of Social Ethics under the Faculty of Arts and Sciences, and advanced students in that department may enroll also in the School for Social Workers. No one is admitted to the School who cannot satisfy the director that he or she is likely to profit by its opportunities. Men register as graduate students, or extension students, of Harvard University; women register in Simmons College.

IV

EQUIPMENT FOR RESEARCH

The University Library. The University Museum. The Museum of Comparative Zoölogy. The Mineralogical Museum. The Geological Museum. Botanical Collections. The Arnold Arboretum. The Peabody Museum. The Astronomical Observatory. The Fogg Museum of Fine Arts. The Germanic Museum. The Semitic Museum. The Harvard University Press.

No university can think of itself as founded only to give instruction, whether to undergraduates or graduates; an essential part of the idea of a university is that it shall be advancing human knowledge. In America this is largely the distinction between a college and a university. The former more or less explicitly limits itself to giving young men a training which will prepare them for their work in life; the latter must, in addition, provide the training for some specialized form of intellectual activity, and it must also make provision for the extension of human knowledge into regions as yet unexplored. For this purpose, it must have professors who have not only the learning but also the opportunity for research; and it must supply as materials and equipment great collections of books, laboratories, and museums.

In all these senses of the word Harvard is a university. Though Harvard College is its heart, and though the graduate schools fulfill a highly important part of its functions, Harvard College and the graduate schools do not exhaust the activities of the University.

Partly in them, partly outside of them, there is a very large amount of activity in the way of research, and an ample product in advanced scholarship and learned publications.

It is a difficult subject to deal with in such a work as this, for learning has now progressed far beyond the ken of the average man. Most of the publications from the laboratories and museums are comprehensible only to a small audience of the scholars on the subjects. Nevertheless, an account of a modern university which neglected all these scientific activities would be incomplete and inaccurate. In this chapter a brief account is given, first, of the libraries of the University, then, of the scientific establishments, and finally, of the several museums for the study of art and archæology.

Mention will be made of those establishments only which are maintained for investigation and research, and in which, if there be any teaching, it is incidental. The line is somewhat hard to draw, since the Wolcott Gibbs Memorial Laboratory, for example, was limited to research by its givers; but the research always includes some advanced instruction, and this laboratory, moreover, is an inseparable part of the general equipment for chemistry. At the Gray Herbarium, on the other hand, though there is provision for some instruction of undergraduates, yet the main purpose of the establishment is to make collections and to study them. As in all other universities, each of the scientific departments has its laboratories, in which instruction is given to undergraduates and graduates, and research is carried on by graduate students and by the Faculty members of the department. As elsewhere, too, the results of this research are an essential and a valuable part of the work of the department. The Department of

Physics has the Jefferson Physical Laboratory; the Department of Chemistry has Boylston Hall, long since outgrown, and a portion of Dane Hall into which it has overflowed; and recently the Wolcott Gibbs Memorial Laboratory and the T. Jefferson Coolidge Jr. Laboratory. The Biological, Botanical, Mineralogical, and Geological Laboratories have, for the present, quarters in the University Museum.

The history of Harvard University Library begins practically with the history of Harvard College, since the bequest of John Harvard, which made possible the immediate foundation of the College, included his books. The College was, therefore, provided with books even before it had a building in which to house them. This beginning of the Library comprised over 300 volumes; and a manuscript catalogue of it by President Dunster is still preserved, though all the books but one were destroyed in the burning of Harvard Hall in 1764. John Harvard's library was such as might have been expected to be owned by an enlightened Puritan minister of the day. The theological works, which included Aquinas, Beza, Chrysostom, Calvin, and Luther, composed nearly two thirds of the whole collection. Among the other books were Bacon's *Essays,* John Robinson's *Essays,* Heylin's *Geography,* and Camden's *Remains,* the chief Greek and Latin classics; and—of a somewhat lighter cast—Quarles's *Poems,* Chapman's *Homer, Poetarum Flores,* and *Thesaurus Poeticus.*

This gift of John Harvard, however, was soon supplemented by gifts from other friends of the College. In 1642 the magistrates gave from their libraries books to the value of £200. In 1655 Sir Kenelm Digby sent 27 books valued at £60. In 1675 John Lightfoot, D. D.,

Vice-Chancellor of the University of Cambridge, made a bequest of his whole library, including the Targums, Talmuds, Rabbins, Polyglot Bible, and valuable tracts relative to Oriental literature. Gibbon wrote of Dr. Lightfoot, that by reading such works he had become almost a Rabbin himself. Three years later Theophilus Gale bequeathed his library, which was so large that for many years it is said to have formed half of the College collection. In 1682 Sir John Maynard, "His Majesty's serjeant at law," gave eight chests of books valued at £400. By the end of the seventeenth century the Library was reckoned, according to Cotton Mather, to be "the best furnished that can be shown anywhere in all the American regions"; and in 1689 Chief Justice Sewall, visiting the library of Corpus Christi College, Cambridge, thought that it "may be about the bigness of Harvard."

In the eighteenth century the Library continued to grow, largely through the generous gifts of friends in England. The Hollis family, of whom, between 1722 and 1804, there were seven among the benefactors of the College, were always keenly interested in the Library and they sent many boxes of books. The first Thomas Hollis sent boxes in three successive years, beginning in 1724. His nephew, Thomas, constantly bought books for the College in London, choosing them with the greatest care and having many of them handsomely bound before dispatching them. He and his uncle kept close track of affairs: in 1725 the elder Hollis wrote: "Your library is reckond here to be ill managed, by the account I have of some that know it, you want seats to sett and read, and chains to your valluable books, like our Bodleian Library. . . . You let your books be taken at pleasure home to Mens houses, and

many are lost." And later the younger Hollis wrote: "A publick library ought to be furnished, if they can, with Con. as well as Pro.—that students may read, try, Judg."

Besides the Hollises other benefactors of the Library in the eighteenth century before 1764 were Dr. Isaac Watts, the writer of hymns, who sent a number of books, including all his own works as they came out; John Lloyd of London, Bishop Berkeley, who sent a collection mainly of the Greek and Latin classics; and the Society for Propagating the Gospel.

The great catastrophe in the history of the Library was the destruction of practically all the books in 1764, when Harvard Hall was burned during a fierce snowstorm, on January 24. The most grievous part of this loss was the destruction of all the books from the library of John Harvard, except one, which was probably loaned for use at the time. The response of the friends of the College to the catastrophe was generous, and in number of books the Library was soon practically as well off as it had been before. Governor Bernard immediately urged the rebuilding of the hall by the colony, since it had been burned while the House of Representatives was making use of it on account of an epidemic of smallpox in Boston. He himself gave more than 300 volumes, besides £28 in money which had been collected under his authority. The Archbishop of York and the Archbishop of Canterbury each sent a generous donation; the Edinburgh Society for Promoting Religious Knowledge 25 volumes and other books to the value of 10 pounds, 12 shillings; the Society in Scotland for Propagating Christian Knowledge, books valued at £30; the Society for Propagating the Gospel in Foreign Parts, books and £100; the Society for Propagating the Gos-

pel in New England, £300, with which 1101 volumes were bought. The Province of New Hampshire, at the recommendation of Governor Wentworth, contributed £300, with which 743 volumes were bought. Thomas Hollis came forward with the generosity of his family and gave £200 for the purchase of books, and in the next five years he sent over 41 cases of books besides. John Hancock of Boston carried out the intention of his uncle, Thomas Hancock, whose large estate he had just inherited, and subscribed £500, with an additional gift of £54. With this money there were bought 1098 volumes. Besides these gifts there were many others; and by 1790 the collection had grown to 12,000 volumes, and a catalogue was printed.

After the Revolution the steady flow of books continued, including many valuable ones from Granville Sharp of London and John Erskine of Edinburgh. In 1804 came the last of the gifts of the Hollis family. Thomas Brand Hollis, who had inherited the fortune of the younger Thomas and assumed his name, and had made frequent gifts of books during his life, bequeathed to the College £100 to be laid out in Greek and Latin classics.

The nineteenth century carried on the same beneficent progress on a constantly enlarging scale, and books in modern foreign languages appear more frequently. John Quincy Adams made a gift of French books, and in 1811, 13 volumes of Russian books. In 1818 the Library made a strong beginning on its great collection of books on American history through the gift from Israel Thorndike in 1818 of the books collected by Professor Ebeling of Hamburg. This gift, which is one of the most important in the whole history of the Library, contained 3200 volumes and 10,000 maps. It

was strengthened five years later, when Samuel A. Eliot gave the books on American history collected by D. B. Warden, who was long American consul at Paris, including 1200 volumes and many maps. In 1819 Goethe sent 39 volumes of his own works.

Through the middle of the century the Library was enriched by constant gifts from Charles Sumner, which continued until his death in 1874, and aggregated 1300 volumes and from fifteen to twenty thousand pamphlets. At his death he bequeathed his library of 3750 volumes, many of which were rare editions, besides his collection of autographs, some of which will be mentioned later. The collection of books on America was again increased, in 1844, by the bequest of $3000 from William Prescott of Boston, and by the gift next year of a large collection of tracts and pamphlets, mainly relating to America, from Obadiah Rich of London. In 1852 came a subscription of $1100 raised by Professor Francis J. Child for the improvement of the collections in English poetry. In 1859 William H. Prescott bequeathed 282 volumes and five volumes of manuscript which he had used in the preparation of his *Ferdinand and Isabella.* In 1861 James Russell Lowell gave 194 volumes. He was constantly buying books which he intended for the Library; and in a letter from Spain in 1878 he wrote: "I buy mainly with a view to the College Library, whither they will go when I am in Mount Auburn, with so much undone that I might have done." On his return from Spain in 1885 he brought some 700 valuable works for the Library, and when he died, in 1891, he provided that the Library should have any of his books a copy of which it did not already possess. Under this bequest it received 827 volumes and 539 pamphlets. A portion of the remaining books were

purchased by subscription in 1900, and now form the main part of the Lowell Memorial Library of Romance Literature.

Among other great gifts of books toward the latter part of the century were the bequest in 1875 of the library of James Walker, President of the College, amounting to 2400 volumes and 300 pamphlets; in 1879 the bequest of Martyn Paine, M.D., of New York, of his library containing 3097 volumes and 115 pamphlets, in memory of his son Robert Troup Paine. One of the most valued gifts of the period was the bequest of 418 volumes by Thomas Carlyle, which he made in the following terms:—

Having with good reason, ever since my first appearance in Literature, a variety of kind feelings, obligations and regards toward New England, and indeed long before that a hearty good will, real and steady, which still continues, to America at large, and recognising with gratitude how much of friendliness, of actually credible human love, I have had from that Country, and what immensities of worth and capability I believe and partly know to be lodged, especially in the silent classes there, I have now after due consultation as to the feasibilities, the excusabilities of it, decided to fulfil a fond notion that has been hovering in my mind these many years; and I do therefore hereby bequeath the books (whatever of them I could not borrow, but had to buy and gather, that is, in general whatever of them are still here) which I used in writing on Cromwell and Friedrich and which shall be accurately searched for, and parted from my other books, to the President and Fellows of Harvard College, City of Cambridge, State of Massachusetts, as a poor testimony of my respect for that alma mater of so many of my transatlantic friends, and a token of the feelings above indicated towards the Great Country of which Harvard is the chief school.

The interest of these volumes is very greatly increased by the comments which Carlyle had written freely on the margins of the books as he read them. Some examples of these are given later.

From the library of Henry Wadsworth Longfellow, at one time Professor of Belles Lettres, his family made gifts amounting to 2000 volumes and 1600 pamphlets, largely composed of American poetry, including many works presented by the authors to Longfellow.

During the last generation the gifts of books have increased in number and in importance. Professor A. C. Coolidge, now Director of the University Library, has been a constant giver, and his gifts have been guided by an intimate knowledge of the condition and needs of the Library. Among them is a large collection of Slavic history and literature and a notable collection of books in Slovak. The gift of the great Riant collection of books on the Ottoman Empire, to which he contributed, and to which he has since added, gives the Library what is probably the largest collection of books in the world on this important subject. In 1902 he promised to give 10,000 volumes on German history, to be called the Hohenzollern Collection, in honor of the visit of Prince Henry of Prussia to the University, March 6, 1902. This collection, with the books already owned, puts the Harvard Library on a level with all but two or three of the best libraries in Germany on this subject. In 1904 Professor Coolidge gave the library of Konrad von Maurer of Munich, which included 2660 volumes and 2911 pamphlets on Scandinavian history and literature, besides the 3000 volumes which went into the Hohenzollern Collection. In 1910 he gave a collection of books, pamphlets, newspapers, and broadsides numbering 2340 pieces, relating to the

French Revolution and the French Commune. In 1909, with Clarence L. Hay, he bought the library of over 4000 volumes of Louis Montt, Librarian of the National Library of Chile, a collection especially rich in works on Chilean history and politics, and on Peru and the Argentine Republic. Besides these larger gifts, Professor Coolidge has given constantly for the purchase of books in various other directions.

Among other gifts in this period was the notable collection of 1014 volumes and 269 pamphlets relating to angling, fishes, and fisheries, from John Bartlett of Cambridge, in 1892, and in the next year his collection of 254 volumes and 22 pamphlets relating to proverbs, emblems, and the Dance of Death. In 1894 Francis Parkman, the historian, bequeathed 2502 volumes, 2000 pamphlets, and 102 maps from his library. In 1908 the Parkman Memorial Committee made a gift of $5950, "the income only of which is to be used for the purchase of books relating to Canada for the college library, to build up a Parkman Memorial collection relating to Canadian history." At different times between 1898 and 1907 there were received from the estate of Professor E. W. Gurney 7750 volumes from his private library. In 1898 Morris and James Loeb of New York and Professor Leo Wiener gave a collection of Judeo-German books printed both in Europe and in America. In 1900, the J. C. Ayer Company of Lowell gave the library of Alphonse Marsigny, consisting of 549 volumes and 48 pamphlets. In the same year Henry C. Warren bequeathed 230 volumes and 116 pamphlets, mainly in Sanskrit, besides 300 volumes to the Sanskrit classroom library. In 1903, Mr. John Drew of New York gave $1000 for the purchase of the dramatic library of Robert W. Lowe of London, consisting of 789 volumes

and 47 pamphlets. In the same year Mr. James Hazen Hyde of New York and Paris bought, for the Library, a portion of the collection of the late Professor Ferdinand Bôcher, comprising 936 volumes and 855 pamphlets on Molière, 246 volumes and 91 pamphlets on Montaigne, and 352 volumes of the French dramatists contemporary with Molière. In 1905 the library of Professor Charles Eliot Norton, which is particularly rich in early printed books, illustrated books of the fifteenth and sixteenth centuries, and presentation copies from English and American authors of the nineteenth century, was purchased by a subscription among his friends and given to the Library. The books were to remain in his possession during his life and the surplus of the fund above the purchase price was to be used as a book-fund the special employment of which he should designate. Professor Norton immediately sent a large number of the more precious books to the Library, in order that they should be safer than in his own wooden house; and he assigned the income of the fund to the purchase of choice and rare books.

In 1908 the Library received the largest single gift of books in its history, consisting of the library of the late Richard Ashurst Bowie of Philadelphia, which was given by Mrs. Edward D. Brandegee in memory of her grandfather, William Fletcher Weld. This library contained over 11,800 volumes and included 3600 editions of the Greek and Latin classics not already in the Library, and 433 incunabula. In 1910 three valuable acquisitions were received: bequests from two professors and a gift from a third. From the estate of Professor James B. Greenough, came 1027 volumes and 400 pamphlets; from the estate of Professor Charles Gross, 500 volumes and 522 pamphlets; and Professor Morris H. Morgan gave

his wonderfully rich Persius collection, comprising about 295 editions and 213 translations of the poet, with 125 critical papers and illustrative works. This collection has been increased since Professor Morgan's death by his friend, Daniel B. Fearing of Newport, R. I. In 1911 the first installment of a series of gifts of $1000 a year was made, to form the Perkins Memorial Collection on the history of the Western states, in memory of Charles Elliott Perkins, formerly President of the Chicago, Burlington, and Quincy Railroad. This collection will be increased through the activities of the recently established Harvard Commission on Western History, which aims to bring together a great collection of books, pamphlets, newspapers, and documentary material for the study of the development of the West. In the same year Francis Cabot Lowell of Boston, a Fellow of the Corporation, bequeathed to the Library his collection of books on Jeanne d'Arc, consisting of 438 volumes and 58 pamphlets; and the next year his widow established a fund of $10,000 for the increase of this collection and for the purchase of books on related subjects.

These gifts are only the more important among those enumerated in the pamphlet containing descriptive and historical notes on the Library of the University. The stream of books is constant, generous, and increasing in number. Special collections have been built up by comparatively moderate annual gifts continued through a number of years; in this way the Library has acquired valuable collections on China and the Chinese, on Switzerland, on Napoleon, on German dramatic literature, on London, and a very extensive collection of books relating to the Catacombs and early Christian antiquities; and there are other collections on smaller subjects.

The strength of the Library for its main purpose of advancing scholarship is largely due to the devoted labors of many professors, who have given their time and thought to the ordering of books in their special subjects. To speak only of three in the last generation,—Professor Francis James Child, Professor Charles Eliot Norton, and Professor Henry Warren Torrey, each in his own field, has laid the foundation of collections of priceless worth to the student. To-day many members of the Faculty feel this obligation and are of constant aid to the staff of the Library in making it possible to bring collections in special fields nearer to completeness.

The aim of the librarians of the Library Council has been to make the Library as complete a working laboratory for scholars, especially in the humanities, as the resources of the University would allow. They have held that there must be a few libraries in the country which should aim at completeness in certain departments, and they have accordingly received freely many books which perhaps may not be looked at once in fifty years. For somebody, however, who is doing definite work in the subjects of which they treat, these books may make the difference between exhaustive knowledge of the subject and a knowledge which falls short of exhaustiveness. In certain fields, especially in the rare books sought after by book-collectors, the Library has to trust to gifts and bequests. In certain other fields it recognizes that other libraries already have such great collections that competition would be a waste; but with these limitations, the ambition of the Library has almost no bounds.

The resources of the Library, however, are by no means limited to the books in the main library building. For the special use of the students under the Faculty of

Arts and Sciences there are 32 special reference libraries, all of which are in other buildings. Some of these are special technical libraries, as those in the chemical and physical laboratories, the six libraries of the University Museum, and the two engineering libraries in the Rotch Laboratory and in Pierce Hall. Besides these, however, many of the departments have special libraries which supplement the main collections by providing other copies of much-used books, and also by putting before students a tolerably complete collection of the most important works on their subject. The Classical Library in Harvard Hall has nearly 5000 books. The History Library in the same building has nearly 7000, and the Library of Economics, which is housed with the History Library, has over 1800. The Library of Social Ethics in Emerson Hall has 3900 volumes, and in the same building is the Robbins Library of Philosophy and the Library of the Psychological Laboratory with more than 4500 volumes. In the Warren House, which was bequeathed to the University by Henry C. Warren, are the Child Memorial Library of English books, the Lowell Memorial Library of books in Romance literature, and the German, French, and Sanskrit libraries. Of these the Child Memorial Library is supported by a fund of over $11,000 which was raised by subscription soon after the death of Professor Francis James Child, the first Professor of English at Harvard University. This library now has over 5000 volumes stored in Warren House, and has besides a considerable number of rare and valuable books and manuscripts which are deposited in the main Library, since Warren House is not fireproof. The Lowell Memorial Library of books in Romance Literature includes about 1600 volumes, of which about half came from James Russell Lowell's

library, and were bought by a general subscription in 1900. A number of books from Professor Norton's library have recently with great appropriateness been added to this collection. The libraries of the German Department and of the French Department in the same building number respectively 1500 and 2600 volumes. Upstairs is the Sanskrit Library, which has over 1000 volumes. A library of books on education in Lawrence Hall numbers 7100 volumes; and the reference works in the Fogg Museum number 1300 volumes. The collection on architecture and landscape architecture in Robinson Hall, which supplements the collections on these subjects in the main Library, now has 3000 volumes. Altogether there are 71,000 volumes in these special reference libraries, which are as a whole freely open to students in the various subjects.

Besides these collections for the use of students under the Faculty of Arts and Sciences, there are also the special libraries of the other departments of the University. Of these the largest is the library of the Law School, which now has over 148,000 volumes and 17,000 pamphlets. Two recent acquisitions have been in themselves notable enough to make this library famous. The first was the great Olivart collection on International Law, brought together by the Marquis Olivart of Madrid, and bought for the Law School in 1911. Its extent may be judged from the fact that the catalogue of this Library is referred to in treatises on International Law as the standard bibliography of the subject. It is rich in original documents, some of them unique, and in documents and pamphlets relating to the Central and South American countries, and to the Spanish-American War of 1898. It has a large amount of material of the highest value to historians. In

1913 the Law School Library bought the books and manuscripts relating to law from the library of the late George Dunn of Maidenhead, England. The manuscripts run back to the thirteenth century, and there are a number of incunabula. In all there are at least 500 separate works dating before 1600.

The Divinity School Library, with 40,000 books and 11,000 pamphlets, has just been combined with the library of the Andover Theological Seminary, with over 62,000 volumes and 37,000 pamphlets, and the combined libraries are now housed together in the new building of the Andover Seminary. The two collections are very rich in all departments of Biblical study, in historical, systematic, and practical theology, and in missionary literature of every kind.

Each of the scientific establishments and laboratories has its own library. At the Museum of Comparative Zoölogy there are about 50,000 volumes and over 45,000 pamphlets. These books are chiefly on zoölogy, palæontology, and geology. In the Peabody Museum, in the other wing of the quadrangle, there is a library of 4800 volumes and nearly 5000 pamphlets on anthropological and ethnological subjects. This library has all the leading anthropological journals and long sets of the proceedings and reports of societies and museums. There are several collections on botany. At the Gray Herbarium is an admirable reference library for the study of the classification, morphology, and geographical distribution of plants, the foundation of which was the private library of Professor Asa Gray. It has now over 13,000 volumes and 10,000 pamphlets. Besides the books, there is a collection, given by Mrs. Gray, of more than 1100 autograph manuscripts of distinguished botanists from the sixteenth to the nineteenth centuries.

The botanical laboratory in the University Museum has a small working collection, of books and pamphlets, and the laboratory of cryptogamic botany has also a collection for working purposes. The library of the Arnold Arboretum, which has now over 26,000 volumes and more than 6500 pamphlets, is thought to be the most complete collection now in existence on trees and shrubs. The greater part has been gathered at the expense of Professor Charles S. Sargent, the Director of the Arboretum.

The library of the Medical School has more than 18,000 volumes and 40,000 pamphlets, besides 200 periodicals which are regularly received. It has not been the purpose of the Medical School to form a very extensive collection of books on medical subjects, for a short distance away is the Boston Medical Library, containing about 69,000 volumes and 38,000 pamphlets. Here there are also nearly 700 current periodicals on file. In practice it is looked on as part of the resources of the School.

Taking all the books in all the libraries of the University together, in 1913, there were 1,020,026 volumes and 625,976 pamphlets, making, with the Andover collections, a total number of 1,747,011 books and pamphlets.

This great accumulation of books is the raw material in which scholarship must work, and it is the true laboratory for many of the great fields of learning, such as history, literature, economics, and philosophy. The ultimate facts in many fields of human activity are to be gathered only through access to a great collection like this. There are many books in such a collection which are rarely looked at, for it is only the occasional scholar who needs to go to them. For him they are

essential, and without them he cannot say the last word that is to be said on a subject. In the end it is the work which does say the last word which is the essential work, and to produce such works scholars must have great numbers of books, many of which will be rarely used, and which for all other purposes may seem worthless.

The Library is very strong for students of history and of literature. Some of its collections, such as those on the Ottoman Empire and on Folk Lore, are probably unequaled. Of material for study in European history, especially that of Germany and of France, the Library has, it is thought, the largest collection in this country. The collections on American history were begun, as has been noted, at the beginning of the nineteenth century, and have been constantly added to, and the collection of maps is very extensive.

Besides these and many other collections of great scholarly richness, the Library has many works of special and sentimental interest. Charles Sumner, who was a notable book-collector, besides giving many books in his lifetime, bequeathed his own books to the Library in 1874. Among them are many books in beautiful bindings and many with associations. They include a copy of Surrey's poems from Horace Walpole's library; *Pastor Fido,* owned by Congreve; a first edition of Milton's *Paradise Lost,* and Milton's own copy of *Pindar,* with frequent manuscript notes. There is, also, an album once owned by a Neapolitan nobleman, in which Milton has inserted two lines from Comus, and a Latin motto, with his signature. Besides these there is Pope's *Essay on Man,* 1733, with his own corrections, and a Bible with the autograph of John Bunyan on the title-page of the New Testament.

Another notable collection was that of Professor Norton. He had bought many early printed books, especially in Italian, with woodcut engravings, and had received gifts of books from many of his friends and correspondents, including almost all the principal English and American authors of the middle of the nineteenth century, with autograph inscriptions. Several early Americana, including the Boston edition of Mather's *Wonders of the Invisible World,* almost unique, had come down to him by inheritance from Professor Wigglesworth. He had also early editions of Wordsworth and Shelley; a remarkable collection of early editions of John Donne, and a number of mediæval manuscripts. One special treasure of his library—a gift from John Ruskin—was the copy of the *Systema Naturæ* of Linnæus, once owned by the poet Thomas Gray, in which the latter had made on the margins and on pages interleaved, delicate pen-and-ink drawings of the insects and birds.

Among the interesting manuscripts in the Library is that of the *Roundabout Papers,*—the gift of Sir Leslie Stephen,—in Thackeray's neat, compact handwriting, written largely on Athenæum Club paper, though in a few cases Thackeray pressed into use the backs of envelopes and other scraps. Another manuscript is a note-book into which Shelley and his wife had copied his poems.

There is also a considerable collection of letters written to James Russell Lowell, which were given to the Library by Professor Norton, his literary executor,—among them a series from Edgar Allan Poe. There are also a few manuscripts by Longfellow, Holmes, Hawthorne, and other American authors.

Not the least interesting among the treasures of the

Library are the Carlyle volumes mentioned above, because of the notes which Carlyle was in the habit of writing in the margins of his books. In a note, for example, on the margin of the *Eikon Basiliké,* Carlyle wrote in pencil: "shewing him (had it been he which palpably it was not) to have been the most perfect Pharisee, inane Canter, and shovel-hatted Quack that ever went about in clear-starched surplice and formula!—Do but read it." And two notes to Mirabeau's *Œuvres:* "No Government ever had a spy of such ability. What a sight (for France and for himself)—that of such a man employed as a 'spy.' A truly grand power of insight is visible in this poor Book,—the only really genial Book (such as it is!) I have ever read on Prussia. Dim vacant twilight all the other, this blazes like noonday. Poor Mirabeau!" And on page 246: "A dreadfully ugly fellow; and such a flash of insight, such a fire of faculty in him withal;—enough to swallow a poor official man, or consume him to ashes."

The interest and the prestige of the Library will be very greatly increased when the Widener books left by Harry Elkins Widener are received. Though he was only five years out of college, he had already amassed a library of the highest distinction, and one in which there are extraordinarily few books of little value. It is rare, indeed, that a man just out of college buys with the intelligence which he displayed. Among the books there are first editions of Spenser's *Faërie Queene,* Ben Jonson's *Works,* Shakespeare's *Poems, Robinson Crusoe, Gulliver's Travels, The Vicar of Wakefield, The Elegy Written in a Country Churchyard;* and a set of the folios of Shakespeare, one of the finest known. The collection is especially strong in first editions and presentation copies of English authors of the nineteenth

THE WIDENER LIBRARY

century, including Dickens, Thackeray, Browning, and Tennyson, and in books with associations. The collection of Stevensoniana, both of editions and of manuscripts, is unrivaled. This precious collection is to be kept in a special room in the new Library building where it can be cared for in a way appropriate to its value.

This building, which is now under construction, will make worthy provision for the great collections of books to be housed therein. It is planned on the most generous scale, and will have shelf-room for more than two million books; so that the Library will not be crowded for many years to come. There will be ample space for readers, both in the great reading-room, which will occupy all the front of the building, and in the large special reading-room for the courses in history and government. Besides this space, open to all students, the provision for scholars is ample and generous. There will be some eighty small studies distributed on the several floors of the stack, for professors and visiting scholars, each one large enough for a desk, and for a stenographer when one is needed. There are also 350 small alcoves, with glass partitions, large enough for a table and a chair, at which advanced students can work. These will occupy the window-space of the portion of the Library devoted to the stack. There will also be on the top floor a number of rooms which can be used for seminars and small classes in which it is necessary to have a considerable number of books for consultation. It is the expectation that the building will be finished in the autumn of 1914, and then the great collections of books will be moved in and can be put at the service of scholars under the most favorable conditions.

The University Museum is a great structure forming three sides of a hollow square, between Oxford Street and Divinity Avenue. In it are housed the Museum of Comparative Zoölogy, the Botanical Museum, the Geological and Mineralogical Museum, and in the south wing the Peabody Museum of American Archæology and Ethnology. In addition to these museums, the laboratories of Cryptogamic and Physiological Botany, of Zoölogy and Mineralogy, of Geology, and of Meteorology, are temporarily provided for in the west side of the building. Much the larger part of two wings is given over to study and research. The exhibition rooms are for the most part open to the public through the week.

The creation of the University Museum was due to Louis Agassiz, one of the great scientific men of the nineteenth century, and one of the great teachers of all time. William James describes him, at thirty, as "already at the zenith of his reputation, recognized by all as one of those naturalists in the unlimited sense, one of those folio copies of mankind, like Linnæus and Cuvier, who aim at nothing less than an acquaintance with the whole of animated nature." He was a leading authority in branches of natural history which now seem little related—ichthyology and geology; and his election to a professorship of geology and zoölogy merely recognized the range of his interest and his acquirements. But besides his great scientific attainments he had an extraordinary power of stimulating the imagination of every one whom he could reach, and of creating the belief that natural history was the one essential subject for every one. The Massachusetts Legislature made no resistance to his appeals for the Museum; and the conditions they imposed, that equal

sums of money should be raised by subscription, were met with hardly an effort on the part of Agassiz. Not unnaturally he had unlimited faith that his scientific aims would not suffer for lack of support; from his youth he had embarked on expensive enterprises with no apparent means of carrying them through, but always with success. When he died nearly $300,000 was raised by general subscription as a memorial fund for the endowment of the work he had begun. The sum included a subscription amounting to over $9000 from more than 86,000 teachers and pupils in seventeen different states. Professor James summed up his career in these words:—

> And so, living from month to month and from year to year, with no relation to prudence except his pertinacious violation of all her usual laws, he on the whole achieved the compass of his desires, studied the geology and fauna of a continent, trained a generation of geologists, founded one of the chief museums of the world, gave a new impulse to scientific education in America, and died the idol of the public, as well as of his circle of immediate pupils and friends.

Louis Agassiz came first to this country in 1846, to deliver a course of lectures at the Lowell Institute. In 1847 Mr. Abbott Lawrence, who had just given $50,000 to the University, to establish what was called in his honor the Lawrence Scientific School, invited him to take a professorship in the new school; and he was accordingly, in 1847, elected Professor of Zoölogy and Geology there. At this time the University had no collections for the illustration of his lectures or material on which his students could work. He therefore set about making such collections himself, out of the by no means large salary of his professorship, and by lectur-

ing outside the University, and other devices. In 1852 the collections were stored partly in his own house, partly in the cellar of Harvard Hall, partly in a shanty overhanging the river on the Brighton road; and in that year Mr. Samuel A. Eliot, then the Treasurer of Harvard College, raised by subscription $12,000 to buy these collections and make possible their arrangement in the wooden building on Holmes Field, which has had many migrations and more uses. Professor Agassiz used this sum merely as a lever to gain more specimens and a larger collection; and six years later his materials had again outgrown the space allotted to them, and had become too important to be tucked into any building which happened to have space to spare. Accordingly in 1858 a movement was launched for the building of an independent museum of natural history.

Just at this time Mr. Francis C. Gray died, bequeathing $50,000 for the establishment of a Museum of Comparative Zoölogy. He left to the determination of his nephew and executor the question whether this Museum should be attached to the University, or should be independent. The executor offered the fund to the University, the income of it to be used for the purchase of specimens. With this income assured, Professor Agassiz set to work on a still larger scheme. He proposed that the Commonwealth should take a share in the enterprise; and by his marvelous influence over men he induced the Legislature to appropriate $100,000 for the endowment of the Museum, on condition that its friends should contribute enough to build a fireproof building. The sum of $71,000 was promptly raised, and the grant secured. The University deeded to the trustees of the Museum, who were in part appointed by the State, in part chosen by the subscribers, five acres of

land; and articles of agreement were drawn up and signed, by which the scientific management of the Museum was committed to a Faculty appointed by the President and Fellows of Harvard College.

The cornerstone was laid June 14, 1859, the Governor of the Commonwealth presiding, and introducing Professor Agassiz, who made an address outlining his plans and his hopes for the Museum. The building as he planned it was to be 364 feet in length by 64 feet in width, with two wings enclosing a court, each 205 feet long and 64 feet wide. The building began with a portion of the east end of the north wing, and into this the collections were moved towards the end of 1859. Here Professor Agassiz set to work with nineteen pupils and assistants, and resources of about $10,000 a year. Many of the pupils and assistants of these early years became in due time distinguished naturalists.

The further progress of the Museum is a history of generous aid from the State, and of even more generous aid from the friends of the Director, to save him from the disappointment of what his son called his "reckless enthusiasm," and of munificent gifts from that son, who to the highest scientific attainments added a business capacity which organized one of the great copper mines of the world. In 1861 the State made a further grant of $20,000 for the Museum, and in 1864 of $10,000 more for the publication of catalogues, which were the nucleus of the quarto *Memoirs* of the Museum. In 1868 the State appropriated $75,000, on condition that an equal amount should be raised by private subscription. In 1874 the Legislature expressed the general sorrow of the citizens of the State at Louis Agassiz's death by appropriating $50,000 towards the memorial fund.

The building has grown rapidly. In 1871-72 another

two-fifths of the north wing was added, and in 1877 the remaining fifth was completed. In 1880-82 the northwest corner piece was added. All these additions were built by Mr. Alexander Agassiz. When in 1888-89 a sum was raised by Professor G. L. Goodale to build the central section of the Oxford Street façade, Mr. Agassiz built the short piece necessary to connect it with the former building, and the portion of the University Museum devoted to the Museum of Comparative Zoölogy was finished. In 1889 another section of the façade on Oxford Street was built for the Mineralogical Museum; and in 1901-02 the children of Louis Agassiz built the southwest corner for the use of the Department of Geology. In the meantime the Peabody Museum of Archæology and Ethnology had begun its building in 1876, at the east end of the southern wing of the Museum. In 1888 another section was added; and now work is in progress on the final section,[1] which will close the gap between the Peabody Museum and the rest of the University Museum. Thus Louis Agassiz's original vision will be fulfilled more than fifty years after the great building was first begun, and on the outlines which he laid down in the beginning. In 1902 Mr. Alexander Agassiz, in the course of a historical address on the Museum, estimated that "the University Museum Building, as it stands to-day, with its collections and libraries, represents an outlay of more than a million and a quarter, with invested funds of about $900,000"; and that "during the past seventeen years $350,000 has been expended for explorations and expeditions." He did not say, what was well known to his audience, that he had himself given by far the larger part of these great sums, and had personally directed their expendi-

[1] The first sod was turned May 28, 1913.

ture. He represented that rarest of combinations, the most distinguished scientific knowledge, a large and generous conception of the functions of a university museum, and the great fortune which made it possible for him to put into execution the plans which he made for the advancement of science.

In 1911 the President and Fellows very appropriately voted that " the buildings of the Museum of Comparative Zoölogy should thenceforth be known as ' Agassiz Hall.' "

The Museum of Comparative Zoölogy, which is the original and the largest unit of the University Museum, was founded by Louis Agassiz with two objects, advanced investigation and the instruction of the public. His great genius as a teacher, and his intense interest in extending the knowledge of natural history, joined to his eager faith in its value in education, gave the latter object almost equal importance in his eyes with the former, and he laid out the plans for the exhibition rooms on a system unique at the time, but since followed in other museums.

The public exhibition rooms occupy the greater part of three floors of the north wing, and adjoining rooms of one floor of the central section, in which are the exhibition rooms of the Botanical Museum and of the Mineralogical and Geological Museums. Near the entrance is the Synoptic Room, in which is a small collection of specimens of both living and fossil animals, which show the characteristics and relationships of the several groups of animals, leading up to man. The other rooms are distributed between two schemes. In one part living and fossil animals are shown, by well-chosen specimens, in their systematic relations to each

other; in the other they are shown in geographical arrangement. In all the exhibition rooms the aim is to present characteristic types rather than a complete display of species.

Some of the specimens are beautiful and striking. There are, for example, a very fine specimen of the great Manchurian tiger, the largest of all the tigers, an excellent giraffe, a dwarf hippopotamus, and a very good specimen of the very rare okapi of the African forests, which has the appearance of being related to both zebra and giraffe. Among the reptiles there are very beautifully mounted examples of the pythons, one of them 22 feet long, hanging from the stump of a tree in the most realistic manner. Some of the fishes, too, have been prepared by a new process which preserves the beauty of their colors. There is a small collection showing the nesting habits of birds, with the birds mounted in various attitudes, both resting and on the wing, near the nests. There are separate rooms devoted to the fossils.

In the room devoted to corals there are two very beautiful and vivid models of two types of coral islands. These models are made on exact scale, both horizontally and vertically, and show the characteristic formation of such islands. Both were made by Mr. G. C. Curtis for Alexander Agassiz from studies on the spot under the direction of the latter. To show the depths of the surrounding sea, the models are scooped away around the islands, and the illusion of sea-level is preserved by suspending minute models of vessels from invisible wires where sea-level would be. On the model of the island of Bora Bora, which has a central volcanic cone, vessels in the harbor and houses are also indicated by minute models, and the tropical foliage climbing up to

the foot of the cliffs is very realistic. By putting the eye at the line of sea-level one gets the most vivid illusion of reality.

The portion of the Museum devoted to the laboratories and the working collections is by far the largest. These collections are very extensive, and very well rounded in all branches of zoölogy. The special interests of both Louis and Alexander Agassiz are represented in the great collections of fishes and echinoderms, both fossil and living. Among the fishes are to be found the large collections from Brazil sent by the former Emperor, Dom Pedro II, as a mark of his regard for Louis Agassiz, and supplemented by the latter himself on the Thayer expedition up the Amazon in 1865-66. The very extensive collections of echinoderms were largely made by Alexander Agassiz himself during his expeditions on the *Blake* and the *Albatross,* and on his expeditions to Australia and elsewhere in the Pacific Ocean. They are also strong in fossil specimens. Neither father nor son, however, allowed his interest in the Museum to be limited to the subjects on which he was himself so high in authority; and both of them built up the collections of the Museum in every department of zoölogy. It is hard to single out for mention any special collections where all are so strong. Perhaps the collection of insects is as distinguished as any, for it includes a very large number of type specimens, that is, specimens on which the original description was based. Among these are some which were used by Linnæus. Professor Hagen, who was brought from Germany in 1870 to be Professor of Entomology, later refused a call to the Museum at Berlin because the collections of the Agassiz Museum were so extensive. The study collection

of birds, too, is believed to be as strong as any in the country.

For the study of these great collections there are many rooms and laboratories, and each department has its curator and his assistants. There are now nine curators. Special collections are sent to scholars, both in this country and abroad, for examination and report; and other scholars come to the Museum for investigation of special subjects.

The activities of the Museum are published in the *Memoirs* and the *Bulletins*. Of the former, which are of quarto size, thirty-nine volumes have now been issued, representing the more extensive studies, each with text and carefully-drawn plates. Of the *Bulletin*, which is an octavo, fifty-two volumes have been published. Each number of the *Bulletin* usually includes a number of studies. In the *Bulletin* are published the contributions from the Zoölogical Laboratory and the Geological Series.

The library of the Museum is rich and extensive. It has had the advantage of aid in ordering books and pamphlets not only of members of the regular staff, but also of visiting scholars, who have written orders for many books which had not yet been acquired. In 1912 the library contained 49,155 volumes, and 45,535 pamphlets. This library, with those of the Boston Society of Natural History and the American Academy of Arts and Sciences, provides an extraordinarily complete collection for the study of zoölogy.

The Mineralogical Museum, which occupies the south central part of the University Museum, is historically the oldest organized scientific collection of the University. Dr. Benjamin Waterhouse, the first Curator, who

introduced vaccination into America, wrote in a letter now in possession of the Museum: "I have in like manner, commenced several useful things besides vaccination. I began the business of *Mineralogy* in 1784, and from about ½ peck of minerals formed the cabinet in this University of Cambridge, which led to the one you now have at New Haven, and every other in the United States." This "½ peck of minerals" of 1784 has become one of the four or five chief collections in our time.

The first considerable addition came in 1795 with the gift from Dr. Lettsom, a Quaker physician of London, of a valuable collection of minerals, which by subsequent gifts he brought up to seven hundred specimens. For this collection the President and Fellows provided a cabinet. They also appointed Dr. Waterhouse keeper of the mineralogical cabinet; and he arranged and catalogued it. In 1795 M. Mozard, consul in Boston of the French Republic, presented two hundred specimens "as samples of the riches of the French soil," on behalf of the Committee of Public Safety, with many protestations of liberty, equality, and fraternity. In 1820 Mr. Andrew Ritchie presented the collection of C. A. Blode, a well-known mineralogist and chemist of Dresden, Germany; and in 1824 several thousand more specimens were added by a subscription in Boston. The collection thus augmented was rearranged by Dr. J. W. Webster, later Erving Professor of Chemistry. The mineralogical cabinet at this time was kept in Harvard Hall; and in 1840 it contained about 26,000 specimens.

The importance of the Mineralogical Museum both in size and quality, however, began in 1850, when Professor Josiah Parsons Cooke, Jr., succeeded to the Erving

Professorship of Chemistry and Mineralogy. In his long service, which lasted until 1894, he gave affectionate care to the collection, constantly adding new or better material, either through purchase or through the gifts which flowed in under the influence of his enthusiasm and knowledge. In 1858 he moved the mineralogical cabinet to Boylston Hall, then just finished; and in 1891 he helped to move it to its present ample quarters, where it became the Mineralogical Museum. Chief among the additions of his long service are the Liebener collection, rich in minerals from the Tyrol, which was purchased in 1869; the J. Lawrence Smith collection of meteorites, given in 1883; the Bigelow collection of agates, formed by Dr. Henry J. Bigelow, Professor of Surgery from 1849 to 1882, and his son, Dr. William Sturgis Bigelow, which was given to the Museum by the latter in 1891; the Hamlin collection of tourmalines, the largest collection yet made from the deposits in Maine; and the Garland gem minerals, given by James A. Garland of New York in 1892.

The Museum occupies a large hall with its gallery, and the specimens are arranged in systematic order in wall-cases, and flat cases on the floor of the hall and gallery. There are between 12,000 and 13,000 specimens on exhibition, many of them very beautiful, apart from their scientific interest. Among the most striking features of the collections are the Hamlin collection of tourmalines from Paris, Maine, and its neighborhood, with about 1000 crystals, mostly of gem quality. Included in the Garland collection of gem minerals is a great diamond crystal, which is a perfect yellow octahedron weighing over 83 carats, a Siberian aquamarine crystal five inches long and two inches thick, a trans-

parent golden beryl of nearly the same size, two large pieces of Australian precious opal, and a globular Mexican fire-opal nearly two inches in diameter. The collection of meteorites is one of the largest in existence, and represents 255 separate falls. The Bigelow collection of agates has 450 specimens, mostly cut and polished, which exhibit in great variety the structure and growth.

Besides the portion of the collection which is open for public exhibition, the Museum has a second extensive collection for class-room use, which is kept in cases in the principal lecture room; and it has also very large stores of specimens for the use of classes for study.

For purposes of instruction the Museum has class-rooms, a chemical laboratory, a machine-room for preparation of specimens, and a room for crystallography, with instruments for measuring the angles and surfaces of crystals. As everywhere else in the University Museum, research is one of the chief aims of the Mineralogical Museum.

The Geological Museum occupies several rooms adjacent to the Mineralogical Museum, in which are exhibitions which illustrate some of the chief forces molding the surface of the earth and their results. There is a small selected collection of fossil remains, both plant and animal; but most of the fossil exhibitions are in the Museum of Comparative Zoölogy. The chief exhibitions of the Geological Museum are in the form of models. These include a model of Valparaiso after the earthquake, showing the way in which the front walls of the houses fell off. There are also models of glacial regions in Switzerland, both typical and actual, from the laboratory of Professor Heim of Zurich. These

models, which are made accurate to scale, both vertical and horizontal, show in a most vivid way the geological formation of the mountain ranges, the movements of glaciers, and the resultant shapes of the land-masses which result from the action of frost and weather. Another type of model is of large areas. Among these are relief models of a section of France, made for the French General Staff and given to the Museum through Professor W. M. Davis. There is also a relief map of Boston and its neighborhood, 10 feet in diameter, made by G. C. Curtis for the State, and now deposited in the Museum; and a large relief map of Southeastern New England, showing the innumerable streams and lakes so characteristic of the region.

Botanical study at Harvard is distributed among six separate departments: the Gray Herbarium, the Botanic Garden, the Botanical Museum, the Botanical Laboratories, the Arnold Arboretum, and the Bussey Institution. All of these are entirely devoted to some special field of botanical study, except the Bussey Institution, where plant-breeding is merely one branch of applied biology, and therefore need not be separately discussed here.

The dawn of botany at Harvard goes back to January, 1784, when the Corporation applied to the General Court to found a botanic garden to receive seeds and plants which the King of France had offered to furnish from his royal garden at his own expense. The State, however, took no action. Before 1788 Professor Benjamin Waterhouse, one of the first professors of the Medical School, and the first keeper of the mineralogical cabinet, was lecturing on botany. In 1805 the Massachusetts Professorship of Natural History was founded

by a fund of $30,000, raised by subscription, and William Dandridge Peck was chosen the first professor. He was sent abroad to study botanical gardens, and on his return laid out and arranged the Botanic Garden, the site for which had been purchased on what are now Garden and Linnean streets in Cambridge, about half a mile from the College Yard. He attained considerable reputation as a botanist and entomologist. When he died in 1822 he was succeeded by Thomas Nuttall, an Englishman of eccentric habits, but of high scientific attainments, who had already published a noteworthy work on American botany, and who was distinguished also for his work on ornithology. He was curator until 1834. In 1833 Joshua Fisher (A.B. 1766) left to the President and Fellows "the sum of $20,000, the income of it to be appropriated to the support of the Professor of Natural History, comprehending the three kingdoms, animal, vegetable, and mineral, or a part of them."

This professorship was not filled until 1842; but in the meantime lectures on botany were given by T. W. Harris, the Librarian of the College, and Dr. A. A. Gould. In 1842 Dr. Asa Gray was elected Fisher Professor of Natural History, and botany became one of the most distinguished of the scientific activities of the University. He was already recognized as the leader among American botanists and as one of the leading botanists of the world. His reputation was so great that many collections of plants from the explorations not only of the United States but of all the rest of North America, including Mexico, and collections from Japan and the Pacific islands were sent to him for study and determination. Through these collections and others made by himself, or received by gift or purchase or

exchange, he built up a very large and valuable herbarium. At the same time he brought together a very large number of books on botany. These collections and this library he gave to the University in 1864, and they are the foundation of the collections of the Gray Herbarium. Both library and collections have since been continuously extended, both by special expeditions and by exchange and purchase.

The collections are invaluable. There are now over 500,000 sheets of specimens arranged in the cases. Their scientific importance is greatly enhanced by the very great number of type-specimens to which all identifications in the future must go back, and of specimens critically identified during monographic work. The fact that Dr. Gray's popular works on botany were so widely used has resulted in the sending to the Herbarium of many specimens, and he and his successor, Sereno Watson, and the present staff have identified an enormous number of new species.

The Gray Herbarium aims to be first and chiefly an American collection. In addition to its riches in the way of specimens of the flora of North America, including Mexico, it is also very strong in plants from Central and South America and from the West Indies. Its collections of European, Asiatic, and African plants are amply sufficient for comparative purposes, but it has not been the policy of the Gray Herbarium to specialize in those regions where other herbaria were in better position to do the work.

The library of the Herbarium is very strong. It has now over 22,000 carefully selected volumes and pamphlets. Its value is reinforced for botanists of this region by the library of the Arnold Arboretum, which is devoted to woody plants, the library of the Massa-

chusetts Horticultural Society in Boston, which is strong in works of horticulture, and by the libraries of the American Academy of Arts and Sciences and the Boston Society of Natural History.

The scientific publications of the Herbarium include the continuation and the revision of the larger works of Dr. Gray, and the *Contributions from the Gray Herbarium of Harvard University*, a series of technical papers devoted chiefly to the characterization of new species and to monographs on genera. The officers of the Herbarium also constantly write papers, both technical and popular, which appear in various scientific journals. The Herbarium issues quarterly a card index of new genera, species, and varieties of American plants. These cards, of which there are now over 100,000, are supplied to other herbaria.

The Gray Herbarium has a building in the Botanic Garden, almost all of which is of modern and fireproof construction. The purpose of the Herbarium is almost wholly research, but its officers offer a few courses for undergraduates and graduates on the classification and distribution of plants.

The Botanic Garden, though it is the earliest foundation for the study of botany at Harvard, is at present on the whole the least active; for its endowment has never been equal to its needs, nor is the soil particularly favorable for the purpose. It has about seven acres of land on Garden and Linnæan streets, not far from the College Yard, and here there are growing some 5000 species of flowering plants, which are interesting for scientific or educational purposes. There is a considerable collection of wild North American plants, illustrating the orders and principal genera of the United States, with a good many species from the Old

World for comparison. The greenhouses have in part been recently rebuilt. In them are collections of desert plants, of cacti, of palms and their allies, of Mexican plants and ferns, of tropical orchids, and of Australasian plants; and there are also houses assigned to experimental work in vegetable physiology and growing plants for the elementary course in botany.

Both grounds and greenhouses are open to the public, and the display of spring flowers, such as tulips, hyacinths, and irises, always draws many visitors. A good many classes come from schools, especially in the spring and autumn; and the students in landscape architecture make use of the Garden for part of their work in horticulture.

In connection with the State Forester's office, the Botanic Garden has carried on the work of propagating and distributing a fungus which is fatal to the brown-tail-moth larvæ, and studies are being carried on in the search for a similar enemy to the gypsy moth.

Under the general direction of the Botanic Garden a Harvard experiment station is maintained in Cienfuegos, Cuba. Here experiments are being made with the purpose of producing and propagating a variety of sugar cane with a higher percentage of sugar, and also in the production of other tropical plants of economic value.

Of all the museums of the University none is more widely known popularly than the Botanical Museum, for here is kept the Ware collection of glass-flowers. These are models of a great number of the native flowers of America, made in glass by Leopold and Rudolph Blaschka, two artists of Germany, father and son, the former of whom is now dead. The process is secret;

and they have been under exclusive contract to the Museum, and have now completed a very large number of typical species. Each species is usually represented by several models, including the whole plant, if it be not too large, separate flowers, or clusters of flowers, and in many cases greatly enlarged models of the pistils and stamens and other parts of the flowers, to show their structure. The work is exquisitely done, and it is difficult to believe that the flowers are not real and fresh-picked. Especially the small clustered flowers are exceedingly natural. The collection well deserves the double star, with which it is distinguished in the Baedeker of America.

Besides this collection of models the Botanical Museum has a considerable collection of books on economic botany, most of which has now to be stored for lack of space. It is, however, accessible for study.

The cryptogamic herbarium and laboratory have rooms on the upper floor of the botanical section of the University Museum. The work in cryptogamic botany did not begin until 1870, when Dr. William G. Farlow became assistant to Professor Asa Gray, with special charge of that branch of the science. At that time it had not really begun to be studied in America, and Dr. Farlow, finding it impossible to get even a passable knowledge of the subject at home, went to Europe and spent two years of study in Germany and France. The state of the science at this time is illustrated by the fact that in the chief German text-book of the subject published in 1870 there is no reference to bacteria. The whole range of these lower forms of plant-life has developed since that time. When Dr. Farlow returned from Europe he was made Assistant Professor of Botany, and was stationed at the Bussey Institution, where he

made special studies of diseases of economic plants due to fungi. In 1879 the instruction in cryptogamic botany was transferred to Cambridge, and Dr. Farlow was elected professor.

In the meantime he had begun the collections, which are now notable in size and completeness. The nucleus was the large collection of fungi made by the Reverend M. A. Curtis, which was bought by Dr. Farlow in 1872. The collection of lichens was based on that of the late Professor Edward Tuckerman of Amherst, which was bought by subscription in 1888. The algæ have been largely collected by Dr. Farlow, but there are many foreign species given by a great number of collectors. The mosses and hepatics are built up on the collection of the late W. S. Sullivant, which he bequeathed to the Gray Herbarium. All the collections belonging to the University of cryptogamics below the ferns are now kept in the Cryptogamic Herbarium. The others are retained at the Gray Herbarium. There is no close estimate of the number of specimens in the Cryptogamic Herbarium, but it surely exceeds 300,000. In the series of Exsiccati, in which the Herbarium is very rich, there are over 160,000. The library of the Cryptogamic Laboratory is a working collection, not very large, for Dr. Farlow has freely and generously put his own large collection of books on the subject at the disposal of students in the department.

Instruction is given in the laboratories both to undergraduates and to graduate students. There are at present an elementary course and a course for undergraduates and graduates, besides the work in research under the direction of the professors. The number of students in so specialized a subject can never be very large.

Of the departments of the University, there is none which has such charm for the eye as the Arnold Arboretum, and for scientific study few which are more distinguished. It was founded in 1872 by the Trustees under the will of James Arnold of New Bedford, for the purpose of scientific research and experiment in the growth of trees and shrubs. The Corporation granted to it 220 acres, from the estate of 394 acres in Jamaica Plain near the Forest Hills station, which had been left to the University by Benjamin Bussey. Its natural surface is highly variegated; it has several hills of some height, and between them are slopes and meadow-land with a considerable brook. On one of the hills there is a thick grove of ancient pine and hemlock.

The Director of the Arnold Arboretum is Professor Charles S. Sargent, who has held that office since its foundation. In 1879 he was elected the first Arnold Professor of Arboriculture. He is in a very real way the father of the institution, for he shaped the original plans, laid out the grounds, and defined the purposes of the Arboretum. It was his conception that it should be a garden devoted entirely to the growth of trees and other woody plants, and in this limitation it is unique in the world. At his suggestion, the President and Fellows made an arrangement with the City of Boston under which the Arboretum was brought into an alliance with the park system of the city. The latter builds and maintains roads, and provides for the policing, and in return the University opens the Arboretum as a public park.

The spreading out of the population to the west of Boston is rapidly surrounding the Arboretum with a thickly settled district; and in pleasant days in spring, when the best of the trees and shrubs are in

blossom, the paths and roadways are often thronged with people and carriages.

In the Arboretum, Professor Sargent has brought together an unrivaled collection of trees, shrubs, and vines, which will grow in the climate of Massachusetts; and in recent years most important additions to the resources of landscape architects have been made through trees, shrubs, and vines brought from Eastern Asia. Professor Sargent himself visited Japan some years ago and explored its gardens and forests, and brought back many seeds and plants. The greatest advance, however, has been made within the last few years through the explorations of Mr. E. H. Wilson on behalf of the Arboretum in the mountains of Western China. This region is extraordinarily rich in trees and shrubs, and practically all the specimens have proved to be hardy under the climatic conditions of Massachusetts. Already there are growing in the Arboretum over 100 species of trees from China, a number equal to the whole number of species of native trees in New England; and there are probably, besides, 500 species of shrubs and vines. Many of the trees are of great beauty and some of them are valuable for timber; and many of the shrubs and vines are notable additions to the resources of our gardens. Besides these trees and plants directly imported, a beginning has been made in hybridizing, which promises indefinitely to increase the number of trees and flowering shrubs and vines which will be available for planting in New England and in America in general.

Scientifically, the value of the collection is hardly to be overestimated, and the collection out of doors is supplemented by the Herbarium and the Library. The Herbarium has already a very large number of speci-

mens of dried plants, and in the new part of the building there is room for a million sheets of specimens. At present the Library has 26,700 volumes and 6600 pamphlets. Its basis was Professor Sargent's private collection, which he gave to the Arboretum some years ago.

The Arboretum is highly productive, not only in trees and plants, but in printed works. The most important work yet issued is Professor Sargent's great "Silva of North America." It is in 14 volumes, and has descriptions and drawings, with much information about the growth of every tree of timber-producing size in North America north of Mexico. The Arboretum is also producing under Professor Sargent's supervision the Bradley Bibliography of the trees and shrubs of the world. It will be in five volumes, and it is hoped that it will be a complete list of all works on the subject in all European languages.

To the layman, however, the outward beauty of the Arboretum is its most striking feature. The land is greatly varied, as has been said, and the planting shows the greatest taste. In spite of the very great numbers of trees and shrubs, there is no appearance of crowding; and except in one part of the ground, where the different varieties are kept together in rectangular beds, the design is wholly natural. Trees of the same kind are kept together for purposes of comparison, and the grouping produces a most agreeable variety in the landscape. All through the spring and early summer, there are constant displays of flowering shrubs. Among the most striking are the lilacs of all varieties and all colors, which are planted along one of the principal roads; a little later come the flame-colored Japanese azaleas, and then masses of rhododendrons and hawthorns and many

bushes of flowering honeysuckle. One of the most beautiful of all the plantations is the long line of American laurel along the brook at the foot of Hemlock Hill, where their exquisite coloring is set forth by the dark masses of the evergreen above them. A little later come the catalpa trees, and then the mock-orange or syringa. Later on there are the various species of viburnum with their snowy white flowers, the elders and the native white azalea, the woodwax or genista, the yellow clematis and the magnolia glauca, and, in the middle of the summer, the clethra. Many of the trees and shrubs have colored fruits and berries, which last well into the winter, and in the autumn there is great variety in the brilliance of the foliage before the leaves drop. Even in the winter, the masses of evergreens against the snow make the Arboretum almost as beautiful as at any other time of the year. Hemlock Hill, which is covered with an old growth of pine and hemlocks, is one of the notable features of the Arboretum. The trees are so high and so thick that even in midsummer the sun's rays do not penetrate, and the ground is covered with the needles and with a few ferns and other plants which can get along without the sun.

There is no regular instruction at the Arboretum, though there is always a chance for study under the director and his staff for advanced students in botany, and there is a good deal of resort to the collections, whether out of doors or in the building, for advanced scientific study. Every year one of the staff conducts popular classes in dendrology for a moderate fee, but there are no examinations.

Louis Agassiz's original vision of the University Museum included means for the study not only of the

earth on which man lives and of the plant and animal life by which he is surrounded, but also of man himself and the conditions under which he has drawn near to the threshold of civilization; and he had himself brought together a beginning of the collections in archæology, and in his plan for the Museum he assigned a whole wing to anthropological and ethnological collections.

The beginning of the fulfillment of this part of his plans was made possible by a gift of $150,000 in 1866 from Mr. George Peabody, the banker, of London. In his letter of gift Mr. Peabody provided that $45,000 was to be set aside for the endowment of a professorship, $45,000 more for maintaining the Museum and increasing its collections; the remaining $60,000 was to accumulate until it amounted to $100,000, and then be used for building. In 1877 the latter fund had reached the amount prescribed by Mr. Peabody, and the first section of the Peabody Museum of American Archæology and Ethnology was built. In 1890 another section was added; and the final section, which will connect the Peabody Museum with the rest of the Museum, is now under construction.

The collections had made a good start even before the first section of the building was ready to receive them. Not only had Louis Agassiz brought over from Switzerland a number of objects from the ancient pile-structures of Lake Neuchâtel, but Professor Jeffries Wyman, the first Curator, who for the time was highly trained in comparative anatomy, had brought together a number of specimens to illustrate the structure of the various races of man. With each addition to its building the Museum has been in the position of having collections ready to fill a considerable portion of the new space.

The Museum is arranged geographically, and as is fitting, the regions which have most space are North and Central America. A large room is given to the Indian tribes of the Northern United States and Canada, another to the Indians of the Southwest, and another to specimens and casts from Central America. Besides these, a large gallery is filled with objects from the islands of the Pacific, and there are extensive collections from South America, and an excellent though far from exhaustive one from Africa. The Museum is strong in objects from the Stone Age all over the world.

A large part of the distinction of the Museum comes from the fact that three generations ago Boston and Salem were the center of a commerce which ranged all over the world. The old sea-captains were in the habit of bringing home "curiosities," many of which found their way to the Boston Marine Society, the Boston Society of Natural History, the Boston Athenæum, and the American Antiquarian Society. These institutions, as their buildings became crowded and their own purposes more distinct, turned over many of these objects to the Peabody Museum, where they can be studied, and where, by being brought together with other similar objects, they take on new value. Another source from which the Museum received priceless and irreplaceable objects was the collection which used to form part of the old Boston Museum, occupying the galleries on the way in to the theater. Among these collections, which were given to the Peabody Museum by the heirs of the late David Kimball, were a considerable number of objects brought home by the expedition of Lewis and Clark to Oregon in 1804-06. The Museum also has the great Hemenway collection of pottery and other objects from the Indians of the Southwest, and a very beautiful

and complete collection of basketwork, largely from the Pacific coast, given by Mr. Lewis H. Farlow. Not the least interesting of the objects from the American Indians is the only extant bow of a Massachusetts Indian, which, it is noted, was taken from an aborigine in Sudbury, in 1660, by William Goodnough, who shot him.

Among the other collections are very beautiful feather-work from the islands of the Pacific and from South America, weapons and canoes from the South Sea Islands, and a great variety of native textiles from all over the world, including many ceremonial pieces which cannot now be duplicated.

In the second floor is a hall devoted to casts of the carvings from the temples of Central America belonging to the Maya cult, with smaller objects found in the ruins. The Museum is particularly rich in this direction, since it has sent a series of expeditions to explore the ruins hidden in the jungle. Some of the metal-work and the ornaments of semi-precious stones, like jade, are of considerable beauty.

The collections are arranged in such a way as to be intelligible to the public, which comes to the Museum in great numbers. In the American Indian room there are models of villages showing how the people lived; and even in the present crowding of the cases the beauty of many of the objects is apparent.

The Museum exists primarily, however, for purposes of research and instruction. It has a large collection of skulls for anthropological study, and many other objects of various kinds than are shown in the cases. The library is extensive and valuable; it now has about 4000 volumes and 3500 pamphlets, all relating to the purposes of the Museum.

The Department of Anthropology, which is closely related to the Museum, gives instruction both to undergraduates and graduates. In 1912-13 there were eleven regular courses, besides six courses of research.

The Museum is governed by its own Faculty, which makes nominations to the President and Fellows to fill vacancies. The President of the University is the President of the Faculty, and the Peabody Professor of American Archæology and Ethnology, who is also Curator of the Museum, is always a member. The Faculty have several funds at their disposal for research and the purchase of specimens.

The history of astronomy at Harvard, in a certain sense, goes back to the very earliest days of the College; for it is recorded that, of the forty-four American almanacs before 1687 which are now extant, forty-one were prepared by twenty-six graduates of Harvard College, of whom ten were tutors. The almanacs were published in nearly every case during the three years of graduate study for the degree of Master of Arts, and it is thought that the collections in them may have been part of the preparation for that degree. The Ptolemaic system still survived, and as late as 1686, Nathaniel Mather (A.B. 1685), who prepared the calendar for that year, argued for the adoption of the Copernican system.[1]

In the next century John Winthrop, Hollis Professor of Mathematics and Natural Philosophy from 1738 to 1779, carried on much research in astronomy. In 1761 he made an expedition to Newfoundland to make observation on the transit of Venus, and the results of this

[1] C. L. Nichols, *Proceedings of the American Antiquarian Society*, New Series, vol. xxii.

expedition and of other observations were published in the *Memoirs* of the Royal Society. Professor Winthrop's telescope now stands under his portrait in the Faculty room. When Harvard Hall was burned, in 1764, among other losses are recorded several telescopes, one of them twenty-four feet long, and a brass quadrant of two feet radius, carrying a telescope of greater length which had formerly belonged to the celebrated Dr. Halley.

It was not until the nineteenth century, however, that an effort was made to establish a regular astronomical observatory at Harvard. In 1816 John Farrar, Hollis Professor of Mathematics and Natural Philosophy, and Nathaniel Bowditch, the author of the *New American Practical Navigator,* and translator and annotator of Laplace's *Mécanique Céleste,* were appointed by the Corporation a committee to order instruments for the observatory; but the project fell through. In 1822 the same committee examined various places near the College to find one suitable for an observatory. The next year John Quincy Adams, then Secretary of State of the United States, wrote to a member of the Corporation, to urge the building of an observatory, and he offered $1000, anonymously, for the undertaking, with a limitation of two years. When this offer had no results, he renewed it in 1825, but again in vain, and the plan for an observatory slumbered until 1839.

In that year William Cranch Bond, who had been engaged in astronomical work for the government of the United States, was appointed Astronomical Observer at the University. He had already a considerable equipment of instruments, which were bought by subscription for the University. The house provided for the Observatory was the wooden house still standing on

the corner of Quincy and Harvard streets, formerly occupied by Dr. Andrew P. Peabody, now the home of Professor George Herbert Palmer. On the roof of this house a cupola was erected, with a revolving dome. The meridian line of the transit instrument intersected the top of Blue Hill in Milton, eleven miles away, and there a substantial monument was erected as a means for the adjustment and verification of the instruments. It is related that after the Observatory was established a barn was built, which cut off the view of Blue Hill, and that it was necessary to buy a right of way, or rather of sight, through the loft of the barn, in order to restore the view of the monument.

Interest in the Astronomical Observatory was greatly increased by the appearance of the famous comet of 1843, and the popular interest in this event made it possible to raise a considerable sum, and to order from Merz and Mahler of Münich a 15-inch equatorial telescope. At the time this instrument was mounted, in 1847, it had no superior and but one equal in the world. In the meantime, land had been bought on the hill on which the Observatory now stands, and a building, handsome and adequate for the time, erected to receive the new instrument. Other instruments were added, and in 1849 the astronomical work at the University was put on a sure basis by the bequest of $100,000 from Edward Bromfield Phillips. In 1845 Mr. Bond was made Director of the Observatory. He has been succeeded in the Directorship successively by his son, George Phillips Bond, from 1859 to 1865; Professor Joseph Winlock, from 1866 to 1875; and Professor Edward Charles Pickering, who has served since 1876.

The Astronomical Observatory is conducted wholly for research. Instruction in astronomy for undergraduates

is provided for by a separate department, which has a small, though adequate, observatory of its own on Holmes Field. The general policy of the Astronomical Observatory since the beginning has been the development of the physical side of astronomy; so that its staff has been employed chiefly in determining the brightness, spectra, and other physical properties of the stars. It has been also a distinct part of its policy to undertake routine investigations on an extensive scale, some of them occupying many years. Examples of such investigations are the studies of the standard positions and of the proper motions of the stars in the zone $+50°$ to $+55°$ and in the zone $-10°$ to $-14°$; the former containing 8627 stars, the latter 8337. Each of these investigations occupied the time of the observers, Professor Rogers and Professor Searle, and a corps of computers for more than twenty years, and the results fill eleven of the quarto volumes of the *Annals* of the Observatory.

In recent years the Observatory has devoted a large part of its activity to photography, both of the stars and of their spectra. In order to make the work complete, it established a station in Peru for observation of the stars of the Southern Hemisphere. With the aid of this station, it has now over 200,000 photographic plates, representing the whole sky for thirty years. These plates constitute an invaluable record, for they make it possible to follow back the history of new stars or other objects before their discovery by the telescope. In many cases the photographic record throws most important light on the nature of the new object. For example, on March 12, 1912, a new star was discovered in Norway. Word was sent by cable to the Observatory in Cambridge, and the news distributed thence through America; so that on the next night many observers

were looking for it. In the meantime, search was made in the library of photographs. Two plates of the region taken on the 10th of March showed no sign of the star, but on two plates taken on the 11th it appeared at nearly full brightness. A photograph of its spectra on March 13 showed that it closely resembled an ordinary star, but on March 14 bright lines appeared in its spectrum, and on March 17 the spectrum had entirely changed. Through investigations of this sort, made possible by these photographic records, invaluable light has been thrown on the new stars.

Another very extensive undertaking by the Observatory was the determination of the standard magnitudes of 80,000 stars. This work, which required more than 2,000,000 settings of the photometers, occupied thirty years. Another long undertaking, which has had most important scientific results, has been the photographing of the spectra of all the stars and the examination of the photographs. Mrs. Fleming, who was in charge of the examination of the photographs for a number of years, until her death in 1911, had discovered 10 of the 19 new stars which were discovered all over the world during her period of service. The Observatory is now undertaking a catalogue of the spectra of about 200,000 stars, according to a new system which involves the classification of the spectra, the photometric magnitude, and the photographic magnitude. Miss Cannon, who is in charge of the work, by skillful application of time-saving devices, is able to classify about 200 stars a day, but it is probable that even at this rate the work will occupy five or six years. The photographs of the stars and of their spectra constitute a mass of material of permanent value such as is possessed by no other observatory in the world, and this material is likely to be more

and more used for reference as time goes on. The Observatory is the central station for the distribution of astronomical news in America.

The equipment of the Observatory now consists of the original 15-inch equatorial, the meridian circle, whose work in its present form may be regarded as completed, a 24-inch reflecter, a 12-inch meridian photometer, and the two Draper telescopes, an 11-inch and an 8-inch. In addition, there has recently been set up in Cambridge a 16-inch doublet, made by the Reverend Joel H. Metcalf of Winchester, who is not only distinguished as an astronomer for his observations on the asteroid, but is also a very skillful maker of instruments. The contribution which he has made through his work on this instrument represents a considerable gift to the Observatory.

Besides the establishment at Cambridge, the Observatory maintains a station at Arequipa, Peru. This establishment in South America was made possible by a fund left by the late Uriah A. Boyden to establish an observing station at an altitude where the atmospheric conditions would be especially favorable. The fund was transferred by the Trustees to the Observatory in 1887, and a careful investigation of meteorological and climatic conditions was made which resulted in the choice of Arequipa. Here are kept a 24-inch telescope, the gift of the late Miss Catherine W. Bruce of New York; a 13-inch telescope from the Boyden fund; an 8-inch telescope and a 4-inch meridian photometer. Over 50,000 photographs have already been taken at the station at Arequipa. Besides the astronomical observations, a long series of meteorological observations has been made, which for several years were carried on at a line of stations reaching from the Pacific over the

Andes to the valley of the Amazon. The highest of these was on the mountain known as El Misti, 19,200 feet high above sea-level.

The Library of the Observatory now contains nearly 14,000 volumes and 33,000 pamphlets.

A most important part of the work done by the Observatory consists in its publications, which include the results of work done not only by its own staff, but by other scientific men, and which include also meteorological observations. Nearly eighty of the quarto volumes of the *Annals* have now been published, and they are appearing at the rate of several volumes a year. The total publication of this Observatory is equal in amount to the publications of all the other observatories in America, except those of the Naval Observatory at Washington. The materials thus published have put at the disposal of astronomers throughout the world an enormous amount of exact data for future study.

The endowment of the Observatory amounts now to nearly a million dollars. The largest gifts have been the Phillips fund, received in 1849; the bequest of Robert Treat Paine (A.B. 1822), amounting to $164,000, received in 1885, and the Boyden fund, amounting to $238,000, which became available in 1887. Besides these funds, the Observatory has received since 1886 an annual gift of $10,000 from Mrs. Draper of New York, in memory of her husband, to continue the research which he had begun on the spectra and other physical properties of the stars.

The income of a large part of these funds is unrestricted to specific purposes; so that the Director can carry out the policy of the Observatory of using its income for the promotion of the science of astronomy wherever it will do the most good. It has therefore

made frequent grants for special undertakings to observers in various parts of this country and in Europe. It has also carried on a number of coöperative undertakings. An interesting example of the latter is the aid which it is now giving to Professor Kapteyn, the great Dutch astronomer at Gröningen, in his studies of the faint stars in selected areas of the sky. The Observatory has used its instruments both at Cambridge and in Peru for making photographs of these areas for him; and when his studies are completed they will be published in its *Annals*. It is expected that the total number of stars thus measured by Professor Kapteyn will be about 300,000, and that they will fill five volumes of the *Annals*. Again, when the Canadian Survey was making a series of determinations of longitude around the earth, the Observatory at Cambridge was able to provide a building and all the facilities for the observations to be made here.

The staff of the Observatory now consists of about forty persons, most of whom are occupied in investigating the photographs and in reducing the observations and studies to form for publication. All the modern devices of business engineering have been adopted, to save time and expense.

The University has three establishments for the study of the fine arts and archæology: the William Hayes Fogg Art Museum, the Germanic Museum, and the Semitic Museum. Of these the Fogg Museum and the Semitic Museum already have buildings especially erected for them, and the Germanic Museum has a fund and plans for a building which will be erected within a short time.

The William Hayes Fogg Art Museum has good ma-

terial for the study of Greek and Roman art in the form both of casts and of original works of art. There are casts of a number of the important works of classical sculpture, and a considerable collection of electrotypes from Greek and Roman coins. The original works consist of a small but important collection of marbles, including a fine marble statue of Meleager and an Aphrodite, a small collection of Greek vases, fragments of Arretine molds and specimens of the ware, and a few terra-cotta figurines. For the mediæval and Renaissance epochs there are some casts of sculpture and a small collection of early Italian paintings containing good examples of the various important schools. The Museum has also a few original drawings by old masters. For the later period there are a number of drawings and several very fine water-color drawings by J. M. W. Turner.

The most distinguished possessions of the Fogg Museum, however, are the prints in the Gray and Randall collections. The number of prints is now very large, and there are many which are rare, and many fine impressions. The collection is administered in close coöperation with the Department of Prints at the Boston Museum of Fine Arts, and an arrangement has recently been made by which the curator of that collection will give each year a course on prints at Harvard. For purposes of study the Fogg Museum has a large collection of photographs, now well over 40,000, of works of art of all epochs and countries.

From time to time the Director of the Museum arranges loan exhibitions of special periods or schools of art. In this way the Museum is able to show important works of Oriental art, including paintings, prints, and sculpture, or exhibitions of a single artist's work.

The close proximity of the Boston Museum of Fine Arts and the intimate relations which are maintained with it make it possible to use its collections also for instruction in the Fine Arts. At this Museum there are frequent loan exhibitions in which are shown some of the fine paintings owned by private collectors in Boston.

The Germanic Museum was established in 1902 to illustrate, by means of plaster casts and other kinds of reproduction, the development of Germanic art and culture. It is at present temporarily installed in the Rogers building; but the cornerstone of a large new building, given by Adolphus Busch of St. Louis, has been laid and the money is in hand to proceed with construction, which has already been begun. The plans have been drawn for a large building, to consist of three portions, each illustrating a period of German architecture. It will be of ample dimensions to hold full-sized casts of gateways and of equestrian statues of heroic size.

The collections of the Germanic Museum are largely the fruit of gifts from the German Emperor, who has taken a great personal interest in the enterprise, from the King of Saxony, from the Prince Regent of Bavaria, and from a committee of leading Germans at Berlin. The Swiss government and the municipal government of the city of Nuremberg have also made important gifts.

The casts and reproductions illustrate representative works of German industry from the fifth to the nineteenth century. Among the architectural casts are those of the Bernward Column and the bronze gates at Hildesheim Cathedral, of the eleventh century; the Golden Gate of Freiburg Cathedral, of the thirteenth century;

the Rood Screen and twelve portrait statues from the Naumburg Cathedral; the equestrian statue of the Emperor Konrad III, in Bamberg Cathedral, of the thirteenth century; the tomb of Emperor Ludwig of Bavaria, in the Church of Our Lady at Munich, about 1468; and several large statues of the eighteenth and nineteenth centuries. Besides these, there are fifty-five reproductions of representative specimens of German goldsmith and silversmith's work by the galvanoplastic process, which reproduces the metal surface.

The Germanic Museum Association is not confined to Harvard, but includes Germans and persons interested in Germanic culture all over the country. Its headquarters are at Cambridge and its chief purpose is to maintain the Germanic Museum of Harvard University.

The Semitic Museum was founded by Jacob H. Schiff of New York in 1889, and in 1902 he gave the Museum building on Divinity Avenue. This building is the seat of instruction in Semitic languages and history; it has a library and three lecture-rooms, besides the Museum proper, which is on the second and third floors of the building. On the second floor is the Assyrian room, with a large collection of casts of Assyrian, Babylonian, and Hittite bas-reliefs and monuments, made from originals in various museums of Europe. It has also a considerable number of original stone and clay tablets with inscriptions in the cuneiform script, a number of cylinder seals, and various other objects in bronze, clay, and stone from the region of Babylon and Assyria. The Palestinian collection, on the third floor, contains objects from Palestine and the neighboring countries, Arabia, Egypt, Phœnicia, Syria, and Persia, all of which had strong influence on the history and the civilization of

the people of Israel. Among these objects there are inscriptions, coins, pottery, bronzes, and a number of costumes and photographs, and specimens illustrating the natural history of the region. There are also models showing the construction of the successive temples at Jerusalem. Besides these objects for exhibition and study, the Museum has also a valuable collection of Arabic and Syriac manuscripts.

For a good many years the University has maintained a Publication Office, through which it has issued the many official publications of the University, including the *Annual Catalogue,* the *Quinquennial Catalogue of Graduates,* the *Harvard University Directory,* the various department announcements, and the periodical publications of a considerable number of the departments. In addition to this very considerable amount of periodical publication, the Publication Office has brought out more than 80 volumes, most of them belonging to various series for which some of the departments have endowment funds.

In 1913 the Publication Office was formally reorganized as the Harvard University Press, which undertakes the publishing of works of high scholarly character, besides continuing the work of the Publication Office in printing and issuing great numbers of strictly University publications. It is hoped that the Press will receive a sufficient endowment to set up a considerable printing plant of its own, with fonts of type in various languages, so that it can gather skilled compositors and undertake the publishing of learned works which otherwise must be printed abroad. At present the printing presses are in the basement of University Hall, and much of the work of printing is let out.

It is difficult to make clear in such a work as this the great amount of scientific activity and productiveness going on at a great university. The professors and advanced students are constantly carrying on researches in fields as yet unexplored, and any active university is surrounded on all sides by a fringe of investigations pushing out into the unknown. Some general idea may be had of these activities by making a list of the regular publications of the departments. It should be remembered that these are very far from exhausting the scientific output, since a great many of the products of the laboratories and libraries appear in learned publications which are not connected with the University.

The regularly established publications by various departments include the following:—

In Philology and Literature there is a Semitic series which consists of occasional volumes in the field of Semitic philology, literature, history, and religion. This is a new series with only one or two numbers. In Indic Philology there are 13 volumes of the Harvard Oriental series, dealing with works in Sanskrit and other East Indian languages. Of the Harvard Studies in Classical Philology a volume is issued each year, and there are now 23 volumes. The Studies and Notes in Philology and Literature are issued under the direction of the Division of Modern Languages, and of these 11 volumes have been issued. Of the Harvard Studies in Comparative Literature three volumes have already appeared, and of the Harvard Studies in English two. In history and political science the Harvard Historical Studies are supported by the Henry Warren Torrey fund, and 19 volumes have appeared in this series. The Harvard Economic Studies are also endowed, and of these eight volumes have now appeared.

The Division of History and Political Science also publishes *The Quarterly Journal of Economics,* of which 26 volumes have been issued. In chemistry and physics the results of researches made by both instructors and students are published in various scientific journals. In psychology two volumes of the Harvard Psychological Studies, published annually by the Harvard Psychological Laboratory, have appeared. In natural science the Contributions from the Gray Herbarium of Harvard University have reached number 38, and there are now sixty-five numbers of Contributions and nine of Memoirs from the Cryptogamic Laboratory. The Arnold Arboretum issues from time to time Bulletins of Popular Information about the plants in its collection. I have spoken elsewhere of the Bradley Bibliography, and of Professor Sargent's great *Silva of North America.* The Museum of Comparative Zoölogy has issued 52 volumes of its *Bulletins* and 75 volumes of its *Memoirs.* The Zoölogical Laboratory, whose papers are published in part in the *Bulletin* of the Museum, has issued 234 numbers of its Contributions. The Peabody Museum of American Archæology and Ethnology has issued 17 numbers of archæological and ethnological papers and 14 numbers of *Memoirs,* besides some special publications.

From the Astronomical Observatory there have come already more than 70 large quarto volumes of *Annals,* and frequent circulars are issued reporting discoveries made at the Observatory.

Of the Graduate Schools, the Medical School issues the *Journal of Medical Research,* containing accounts of original investigations in medicine, usually about two volumes a year; the students of the Law School, with the help of the Faculty, publish the *Harvard Law*

Review monthly through the academic year; of this publication twenty-five volumes have now been issued, and it contains many learned papers on legal subjects by professors and graduates of the School. The Graduate School of Architecture issues the *Architectural Quarterly of Harvard University.* This has only recently been established. From the University Library come the *Bibliographical Contributions,* issued from time to time: 60 numbers have already been printed.

V

THE GOVERNMENT AND THE GRADUATES

The Government of the University. Commencement Day. The Alumni Association. The Harvard Clubs.

THE government of Harvard University to-day rests on the charter of 1650, modified very slightly by an "appendix" added in 1657. About the end of the seventeenth century there were, as part of the struggles of the old school of theologians to maintain control, several efforts to modify the charter; but when happily these efforts failed to gain the approval of the government in England, by a resolve of the General Court of the province in 1707 the President and Fellows were directed to exercise the powers granted by the charter of 1650. Under this charter, Harvard University, with all its departments, its numerous buildings and extensive area, not only in Cambridge and Boston, but in Jamaica Plain, Petersham, and New Hampshire, with its staff of over 700, and its students numbering over 4000, has all grown easily and naturally out of the little College, half divinity school, half boarding-school, of the time when the charter was granted. It seems fairly demonstrated then that this charter was admirably conceived for the work which it had to do.

The secret of the success of the charter lies in its simplicity, elasticity, and freedom from hampering limitations. It was written when New England was still a

theocracy, when citizenship and church-membership were still identical, and the dream of a millennium based on the hierarchy and the Levitical scheme of the Old Testament was still radiant. Its framers could hardly have doubted that under it the government of the colony would continue to be in the hands of ministers. Nevertheless, even under such conditions, it meant largeness of view and practical sense to entrust almost absolutely to the hands of seven men the administration of an institution for which such high hopes were entertained.

Under the charter, the President and Fellows of Harvard College are the owners and managers of the University in trust for the community. In them vests all property, whether real or personal; they manage the funds and endowments and their investment; they distribute the income where it is not specifically assigned to a fixed purpose; they decide all questions of building and the care of the land; they elect, subject to the approval of the Overseers, their own successors and all professors and other officers of the University; through their control over the income and over appointments, they direct the policy of the University, and, except so far as their action is modified by large gifts, they determine the directions in which the University shall expand.

Nevertheless, as in all effective government, one man has the chief directing power. The President alone is expected to know the affairs of the University in detail, and he makes recommendations to the Corporation and discusses with it all questions of policy and action. The Corporation meets regularly twice a month throughout the academic year; each meeting occupies the better part of a morning, and there are, besides, occasional

extra meetings. There is committee work also, some of which is onerous. The responsibilities of the Corporation can be judged from the fact that in the Catalogue of 1912-13 there are listed 774 teachers of various grades, all of whom have been appointed by the Corporation, who give instruction to 4729 students (exclusive of University Extension students); that there are 22 different departments, including the museums and other departments of research, and that the invested funds of the University amount to over $26,000,000, and the income to $2,500,000. It is obvious that even for giving advice on the daily affairs of so great an organization, the Fellows must spend much time and give much thought.

From the beginning, the members of the Corporation have been drawn from the leaders of the community which surrounds the College. At first the Corporation consisted mostly of ministers of the leading Puritan churches of Boston and its neighborhood. John Leverett, however, who joined the Board in 1685, was a layman, the first to be elected. At first, too, the tutors or instructors in the College were, more or less regularly, also Fellows. It was not until after 1700 that a distinction came to be made between resident and non-resident Fellows, and this distinction for many years was vague. As late as 1824 three of the resident instructors addressed a memorial to the Overseers, in which they declared that "by the charter of the University, the Fellows of the University are required to be resident instructors." The Overseers, after careful consideration, decided against them; and since that time there has been no questioning of the principle that there is no obligation to elect only Members of the Faculty to the Corporation. In 1806, when Chief Justice Parsons was elected to succeed Professor Pearson, the Corporation

for the first time became composed exclusively of non-resident Fellows.[1]

As the property of the College increased, and its prime function was changed from the training of ministers to the education of youth for all walks of life, the members of the Corporation tended to become men of affairs; and in the last hundred years there have been only five clergymen elected Fellows. In the last half-century only twice have professors been elected as Fellows,—Professor Joseph Henry Thayer of the Divinity School and Professor Ephraim Whitman Gurney of the Department of History,—though Alexander Agassiz, who was Curator of the Museum of Comparative Zoölogy, also served twice in the last quarter of the nineteenth century.

Throughout the history of Harvard the Corporation has been composed of men of the highest standing in Boston, men respected not only for judgment and administrative capacity, but for their largeness of ideas and for their liberality of thought. A seat on the Corporation of Harvard College has always been one of the " blue ribbons " of Boston, and the list of past and present members is admirably representative of the men who have made Boston and, through Boston, New England, a force in the country. The first President was Henry Dunster; the first Treasurer, Thomas Danforth, and the first Fellows, Samuel Mather, Samuel Danforth, Jonathan Mitchell, Comfort Starr, and Samuel Eaton. Since that time, the list has been enriched with such names as Wigglesworth, Bradstreet, Eliot, Sewall, Brattle, Holyoke, Winthrop, Bowdoin, Lowell, Jackson, Story, Bowditch, Crowninshield, Parkman, Adams,—to take only a few, almost at random.

[1] Josiah Quincy, *History of Harvard University*, vol. ii, p. 338.

Anyone who knows the history of Boston knows the leadership which has been won and maintained by the intellectual aristocracy which Dr. Holmes happily denominated the "Brahmin caste." The ranks of this aristocracy are always open to recruits from below, and the permanence of its family names is no more remarkable than the number of new family names which take their places in it from generation to generation. Harvard is a Boston institution chiefly in the sense that it has had the counsel and support of the men who have maintained themselves as leaders in Boston by sound judgment, enterprise, and unselfish public service.

Side by side with the Corporation and in close though never very precisely defined relations of supervision stands the Honorable and Reverend Board of Overseers. Historically, the Overseers antedate the Corporation, for in 1642 the General Court made the following order:—

> The Governor and Deputy-Governor for the time being, and all the magistrates of this jurisdiction, together with the teaching elders of the six next adjoining towns,—viz. Cambridge, Watertown, Charlestown, Boston, Roxbury, and Dorchester,—and the President of the said College for the time being, shall, from time to time, have full power and authority to make and establish all such orders, statutes, and constitutions as they shall see necessary for the instituting, guiding, and furthering of the said College and the several members thereof, from time to time, in piety, morality, and learning.

After a few years, however, this form of government was found cumbrous; accordingly, when the charter was voted by the General Court, the active authority was put in the hands of a Corporation of seven, but with the

proviso that their action " be allowed by the Overseers." The " appendix " of 1657 to the college charter went a step further in simplifying the government by providing that the Corporation could take action " without dependence upon the consent of the Overseers foregoing. Provided always, that the Corporation shall be responsible unto, and those orders and by-laws shall be alterable by, the Overseers, according to their discretion." Under this proviso, the practice to-day is that all appointments for more than a single year are referred to the Board of Overseers for confirmation, and that all important changes in policy must meet their approval before going into effect.

The purpose of retaining the Overseers along with the Corporation was to make sure that there should always be somebody to represent the best general public opinion of the community, to whom the Corporation could give account of their stewardship. In the earlier years the Overseers were the ministers of the nearby churches and the magistrates of the colony or province. When, in 1780, the constitution was framed for the new Commonwealth of Massachusetts, special articles secured to the College the perpetual enjoyment of its vested rights and powers. This section of the constitution provided that the successors to the Governor, Deputy-Governor, and Magistrates of the Colony of Massachusetts Bay, should be the Governor, Lieutenant-Governor, Council, and Senate of the Commonwealth. Thus the close association between the Commonwealth and the College was maintained.

Gradually the limitation of the personnel of the Board to clergymen and state officials gave way. In 1810 the Congregationalist ministers of specified towns and the State Senate were replaced by fifteen ministers of Con-

gregational churches and fifteen laymen, all inhabitants of the State, who were to be elected by the Overseers themselves. The proviso that this act should not go into effect until accepted by the Corporation and Overseers affirmed the principle that the Commonwealth should not change the constitution of the College without the consent of its Governing Boards. It was not long, however, before the Senate of the Commonwealth was restored as part of the Board of Overseers. In 1834 the Legislature passed an act opening the board to clergymen of all denominations, but this act was not accepted until 1843. In 1851 another change formally recognized the fact that the state of society in New England had changed so completely that the ministers, though still highly respected, were no longer the dominating representative force in the community that they had been. Accordingly, in 1851, it was provided that the Board of Overseers should consist of the Governor, Lieutenant-Governor, President of the Senate, Speaker of the House of Representatives, Secretary of the Board of Education, President and Treasurer of Harvard College, together with thirty other persons to be elected by joint ballot of the Senators and Representatives of the Commonwealth. In 1865 a still further change in the relation of the College to the Commonwealth was effectuated by providing that the thirty elected members should be chosen by the graduates of the College. In 1880, the increasingly national character of the University was recognized by providing that persons not inhabitants of the Commonwealth should be eligible as Overseers. Finally, in 1889, the Commonwealth abdicated any direct control over the University by turning over to the Corporation and Overseers the determination of what classes of graduates

should be entitled to vote for Overseers. Under the authority of this act, which was assented to by the Overseers in 1902, and by the Corporation in 1903, the two boards, in 1907, adopted the following vote: "That the degrees conferred by the Governing Boards of the University, upon the recommendation of the Faculty of Arts and Sciences, upon the graduates of the Lawrence Scientific School, of the Graduate School of Arts and Sciences, and of the Graduate School of Applied Science, and the degree of Bachelor of Science conferred after residence in Harvard College, shall entitle the recipients thereof to vote for Overseers to the same extent and under the same restrictions to and under which recipients of the degree of Bachelor of Arts of Harvard College may now so vote." This provision still leaves the graduates of the professional schools, except the Graduate School of Applied Science, without the suffrage. Unless inertia is too strong a force, it is likely that they will be added before long. All through these changes, it will be noted that the aim has been to provide a body of men, who, for that special period, shall best represent the graduates of the College and the educated public opinion of the community.

For many years the elections for Overseers have been held on Commencement Day, five Overseers being chosen each year for a term of six years. The nominations are made by a committee of the Alumni Association, who spend much time in selecting, from among the graduates, names to be put in nomination. They are required to send out to all graduates a number of names not less than twice or more than three times the number of the vacancies to be filled, and with the lists they send a brief statement of the services of the candidates and of offices they have held, whether inside or outside the University.

The graduates send in their preliminary ballots by mail; and in some years more than five thousand ballots have been received. From these ballots is made up the list of candidates to be voted on at Commencement, consisting of double the number of vacancies, taken from the top of the list and arranged in the order of the number of votes received on the preliminary ballot. The election is conducted on the "Australian Ballot" system.

Membership in the "Honorable and Reverend Board of Overseers" is always an honor, for it is a mark of the confidence of graduates in the character and judgment of the men who are elected. Through them the Corporation is kept informed of the general status of opinion concerning the College among graduates throughout the country. Of recent years there have always been Overseers from places distant from Boston. In 1911-12 there were Overseers from Kentucky, Missouri, New York, Minnesota, New Jersey, Oregon, Illinois, and Washington, D. C.; and in that year barely a majority of the Board lived in Boston or its neighborhood. The Overseers from a distance are, many of them, as assiduous in attendance at the monthly meetings as are the members from Boston. More and more it is felt that the Overseers have unusual opportunities to be of service to the University; and though they cannot, in their comparatively few meetings, come to any intimate acquaintance with the University in detail, they represent and concentrate a strong interest of graduates in the maintenance of its prosperity and in strengthening its power of service to the country.

Their function is somewhat extended by the committees which they appoint to visit the various departments and activities of the University. In 1912 there

were forty-seven of these committees. They are made up partly of Overseers, partly of graduates, partly of friends of the University who are not graduates. The seriousness with which they regard their functions varies greatly. Under an inactive chairman the service of the committee may be wholly perfunctory. Where the chairman is active, the committee is of great service to the officers of the University by giving them counsel, by helping to raise money for the smaller needs which always press on the teaching force, and by the moral encouragement of their friendship.

In the main, the Overseers have acted in the past rather as a governing wheel than as an accelerator of action. On four occasions, however, they have forced on the Corporation important changes of policy in the direction of liberty and constructive reform. It was they, who, in 1766, compelled the change by which the instruction in the College was made departmental, so that each tutor should teach a subject instead of carrying one class all through the four years. In the early nineteenth century the Board again planted the seeds of the elective system, which, though the planting was too early for immediate growth, still kept some vitality until the coming of President Eliot. In 1826 they required the President of the University and the Treasurer to make annual written reports; and out of this vote has grown the series of reports which since President Eliot's appointment have become notable features in the general educational progress of the country. In general, however, their action has usually slowed down the advance of the University. It was not until 1886, for example, that they accepted the recommendation which the College Faculty had begun to make as early as 1873, that attendance at morning prayers should be voluntary.

Nevertheless, such a body, in representing public opinion, even though it occasionally resists an advance, is more often invaluable by making necessary further study of a proposed change.

There are still a few remnants of formal procedure in the constitution. For example, the Corporation, before proceeding to an election to fill a vacancy in its own number, must formally ask the consent of the Overseers to proceed to the election; and then, having this consent, and having made the election, their action must be confirmed by the Overseers. The Faculty have no communication directly with the Overseers: if they wish to transmit a vote to the Faculty, they must send it through the Corporation; and in like manner the Faculty returns its answer through the same channel.

The faculties and officers of the various departments come into relation with the Governing Boards chiefly through the President. Down to Mr. Eliot's time presidents were not expected to take too much interest in the professional schools. A story is told to the effect that in the first years of his administration, when he was urging reforms in medical education, one of the older members of the Medical Faculty broke out with the question why there were so many changes going on in the Medical School when things had run so comfortably for so many years; and that President Eliot quietly answered, "The reason is that there is a new President." This independence of the professional schools is now a thing of the past, and the President and the other members of the Corporation are expected to take almost as active an interest in them as in Harvard College. Appointments of the younger men are naturally made only after consultation with the older men who know them; but that is equally true of ap-

pointments in the Faculty of Arts and Sciences. The last forty years have greatly strengthened the organization of the University into a single unit.

In the older times Commencement Day was an occasion of drink and of riot. For many years it was a public holiday: the Governor, escorted by his bodyguard, came in state from Boston and all Boston and the surrounding region trooped to Cambridge, where the Common adjacent to the College was turned into a country fair. In the earlier times liquor was sold without restriction. As early as 1693 there were symptoms that Commencement was becoming a period of disturbing festivity. In that year the Corporation passed the following vote:—

Having been informed that the custom taken up in the College, not used in any other Universities, for the Commencers to have plumb-cake, is dishonorable to the College, not grateful to wise men, and chargeable to the parents of the commencers, [the Corporation] do therefore put an end to that custom, and do hereby order that no commencer, or other scholar, shall have any such cakes in their studies or chambers; and that if any scholar shall offend therein, the cakes shall be taken from him, and he shall moreover pay to the College 20 shillings for each such offence.

In 1722 another ordinance for "reforming the extravagances of Commencements" provided that "no preparation nor provision of either Plumb Cake, or Roasted, Boyled or Baked Meates or Pyes of any kind shal be made by any Commencer," and prohibited them from having in their chambers "Distilled Lyquours" or "any composition made therewith."

In 1728 the Corporation voted to request the Lieu-

tenant-Governor to direct the Sheriff of Middlesex to prohibit the setting up of booths and tents on Commencement Day. In 1733, the Corporation and three Justices of the Peace in Cambridge met to concert measures to keep order at Commencement, and under their warrant to establish "a constable with six men, who, by watching and walking towards evening on these days, and also the night following, and in and about the entry to the College Hall at dinner-time, should prevent disorders." Such provisions seem to show that life in a Puritan colony was not of necessity all prayer and sermon for everybody.

In 1761 the Corporation voted to allow punch, on the ground that "as it is now usually made, it is no intoxicating liquor." In 1749 the feeling about the disorders on Commencement Day became so strong, that three gentlemen who had sons in the graduating class offered to give the College one thousand pounds provided that "a trial was made of Commencement this year in a more private manner."

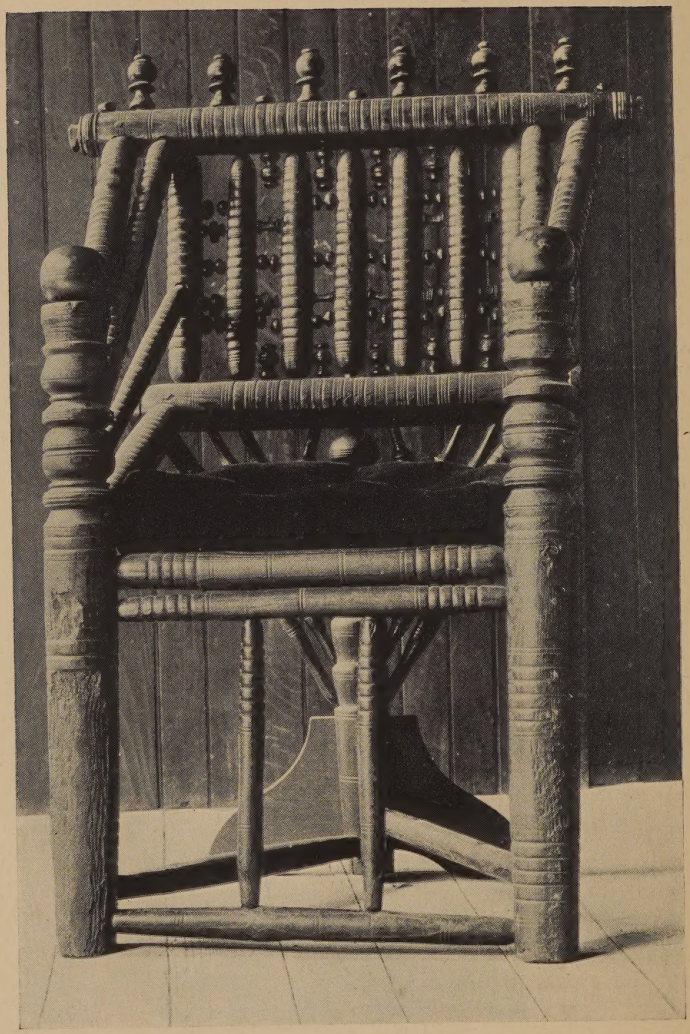
After the Revolution the disorders increased still more, and Professor A. P. Peabody (A.B. 1826) describes Commencement in his day as follows:—

> The entire Common, then an unenclosed dust-plain, was completely covered on Commencement Day and the night preceding and following it, with drinking-stands, dancing booths, mountebank shows, and gambling-tables; and I have never heard such a horrid din, tumult, and jargon of oath, shout, scream, fiddle, quarrelling, and drunkenness as on those two nights. By such summary methods as but few other men could have employed, Mr. Quincy, at the outset of his presidency (1829), swept the Common clear; and during his entire administration the public days of the College were kept free from rowdyism.

It was not until 1836, however, that Dr. John Pierce, who attended every Commencement but one from 1784 to 1848, entered in his record: "Be it noted that this is the first Commencement I ever attended in Cambridge in which I saw not a single person drunk in the hall or out of it. There were the fewest present I ever remember, doubtless on account of the bis-centennial celebration to be observed next week."

The improvement made by President Quincy in clearing up the Common was carried to the College itself. In 1846, when, even at the Commencement dinner, only wine and lemonade were served, the various classes held reunions in rooms in the Yard at which they put before themselves and their guests much strong drink. It was not until 1893 that the Corporation finally voted that, "Hereafter no punches nor distilled liquors shall be allowed in any college rooms on Class Day or Commencement Day." With this vote one of the ancient customs of the fathers fell before the more decorous ideas of their descendants.

Now Commencement Day is an imposing if no longer hilarious academic festivity. In the morning the University is the host and the degrees are conferred in Sanders Theatre. The candidates for the degrees from the College and the various professional schools, all in cap and gown, assemble at different points in the Yard, under the direction of the University Marshal and his aides. The President and Fellows receive the Governor and his staff, who come out from Boston escorted by the Lancers, a body of citizen cavalry the brilliancy of whose uniform atones for a certain inexperience in horsemanship. Then the procession is formed, with the candidates for the degrees in the lead, for the march to Sanders Theatre. As the head of the line reaches



THE PRESIDENT'S CHAIR

Memorial Hall, of which Sanders Theatre is a part, the younger men divide and stand on each side of the path, to allow the President and Fellows and the Governor and invited guests to pass through their line. Then all follow in.

The theater is small; its total capacity with the platform crowded is less than 1500. Since the number of degrees now conferred each year is about a thousand, and the members of the teaching staff who are entitled to seats on the platform is over 700, it will be seen that there is little space for audience. As a matter of fact, of the graduating class in the College, only one in every three or four gets a single seat to give to a member of his family. The meeting is called to order according to ancient custom by the Sheriff of Middlesex County, who pounds on the floor with the scabbard of his sword and utters the "Oyez, Oyez, Oyez,"—the ancient form for calling a court to order. Then, after the prayer, the University Marshal calls on four or five of the candidate for degrees for their "parts." Of these the only relic of the ancient times is the Latin Salutatory; the other parts are all essays on matters usually of very contemporaneous interest. Then there is an intermission, during which the band in the gallery performs for the entertainment of the audience.

In the meantime the President has been sitting with the rest of the Corporation behind the rail at the rear of the platform. Before the rail stands the ancient chair of the President. This chair, a curious old structure with a three-cornered seat and intricately turned posts and back, was given to the College during the presidency of Holyoke, which lasted from 1737 to 1769. The intermission over, the President takes his seat in this chair for the conferring of degrees, including the

honorary degrees, and when the latter are reached, the interest of the audience is keen to see who will be honored and to hear the terms in which their claims to distinction will be summed up. As the President names each of them, the recipient rises; then the President rises and bows to him, and reads the short "epitaph" in which he has summed up his title to the distinction. Then the President bows again and sits down, and the audience applauds the newly adopted alumnus. After the conferring of the honorary degrees and a brief prayer, the meeting is dissolved and the term of the University for the year is brought to a close.

The ceremonies have still the simplicity and dignity of the Puritan days. Until within a generation there were no rules and no customs about academic costume, and the Faculty came to Commencement in what garb they chose. The fashionable wear was the black silk gown still worn by all ministers except the Episcopalians, and for an important occasion most of the ministers' gowns in Boston and the neighborhood were under requisition for Commencement. Later, as the University become more complex, it was necessary to have some slight increase in form, and now the Faculty are requested, though they are not required, to wear academic gowns. A few years ago, the Corporation, on the recommendation of the Faculties, adopted a full set of gowns and hoods for the use of officers and graduates of the University. Harvard men are still as a rule shy about appearing in bright colors, but the University Marshal and his aides are expected to appear in their hoods and gowns, and there is always a certain sprinkling of hoods in various brilliant colors, representing degrees granted either for study or *honoris causa* at other universities.

In the afternoon the Alumni Association becomes the

host and entertains the President and Fellows of the University and the distinguished guests of the morning. The chief marshal of the day, who is always nominated by the class which is celebrating the twenty-fifth anniversary of its graduation, has appointed a staff of aides and marshals. He gives a luncheon to the guests of the Association and his own friends, and at the same time the various classes supply informal refreshments in the rooms about the Yard, in which they hold their reunions, and most of the clubs keep open house for their members. At two o'clock the band begins to play in the Yard and the graduates assemble. The chief marshal of the day mounts a chair at the corner of Massachusetts Hall, and calls off the order of the procession, beginning with the President and Fellows, the Overseers and the invited guests of the University. Then he calls for the classes in order, beginning with the oldest. Usually there is no response until he has called ten or fifteen classes. Then some brave old gentleman steps out of the throng and takes his place at the head of the line amid the applause of his younger fellow graduates. Then, with occasional gaps, the long line of classes falls gradually into line. Usually there are at least 60 classes represented in the procession. When they are all formed, the band at the head strikes up a lively march and the procession winds around the Yard. As they pass the steps of University Hall, each class is cheered by a cluster of undergraduates and graduates which always assembles there. The procession used to be formed before a regular luncheon, which was served in Memorial Hall. When the numbers of those who wished to attend increased, it was found necessary to give up the luncheon, in order that the space occupied by the tables might be saved for chairs. In 1910 even this

expedient was found insufficient, and the experiment was tried of holding the meeting in the open air in the quadrangle behind Sever Hall. Here a long platform is built against the Hall, on which are seated the President of the Alumni Association and the guests of the day; and the graduates have chairs on the grass in front and on a wooden stand built up opposite the Hall. A canvas awning is stretched overhead to keep off the sun.

At this meeting it has been a long-standing custom that the President of the University shall make a brief report to the graduates on the year which is just closing, and in particular that he shall give an account of the gifts received during the year. There is always keen interest in this portion of his address. He has also the chance to speak to the graduates in a less formal and more intimate way than in his annual report; this address is, as it were, a talk within the family.

After the President of the University the President of the Alumni calls on the Governor of the Commonwealth, who, by custom going back to the foundation of the College, always represents the Commonwealth at Commencement. After the Governor a few of the other distinguished guests are called on, and the meeting breaks up by four o'clock.

One of the manifestations of college and university spirit in America which is especially striking to foreigners is the enthusiastic loyalty of graduates, manifested in the crowded reunions of the classes at academic festivals and in the generosity with which they give time and money for the advance of their own institutions. In this respect Harvard is no exception. The gatherings on Commencement Day have long been

notable; and of late years, as the University has grown in size, the graduates have formed more organizations which combine social and festive ends with serious support of the University. At the same time, the steadily increasing flow of gifts to the University proves that the enthusiasm has a solid basis.

Of the associations of graduates, the most inclusive is the Harvard Alumni Association which was formed August 26, 1840. The report on which the Association organized was signed by William Minot (A.B. 1802), Henry Ware, Jr. (A.B. 1812), Charles G. Loring (A.B. 1812), Charles P. Curtis (A.B. 1811), and Samuel Greele (A.B. 1802), and it is marked by all the conscious dignity of eloquence which was the fashion of the day. It reads as follows:—

After much deliberation, and conference with zealous and conspicuous friends of the College, the committee has been convinced that such an Association is desirable, alike for the happy influence it may exercise in the promotion of good-fellowship and personal regard among the sons of our venerated Alma Mater; and the beneficial effect that may be anticipated from a periodical return to her sacred groves, renewing that interest in her welfare and glory, which separation and absence have hitherto caused too long, and lamentably, to slumber. They believe too, that the causes of Christian morals, and intelligent patriotism, as well as that of Good Letters, might be essentially advanced by public addresses to be pronounced by the distinguished statesmen and scholars whose names crowd her catalogue, and by the extemporaneous effusions at the festive board, and a zeal thus created in the great objects, and peculiar purposes of American scholarship, the want of which is apparent to every lover of learning and of his country.

Some of these objects are indeed partially attained by the Society of the Phi Beta Kappa. But it is well known, that the exclusive character of that Institution,

shutting out a large majority of the Alumni from its privileges and founded on distinctions, which, however just in their origin, cannot be rationally considered to entitle its members to an invidious preëminence through life, exerts an unhappy and extensive influence in alienating numbers of the Alumni from attending at the annual festival of the College, who would gladly throng her halls, if they could come to meet their classmates and friends, upon equal terms, in communion upon the topics of learning and patriotism, alike important and dear to all.

The first officers of the Alumni Association were: President, John Quincy Adams (A.B. 1787), ex-President of the United States; Vice-Presidents: Joseph Story (A.B. 1798), Justice of the Supreme Court of the United States; Edward Everett (A.B. 1811), Minister to England, Secretary of State, and Governor of Massachusetts; Directors: John Pickering (A.B. 1796), President of the American Academy, Horace Binney (A.B. 1797), member of the American Philosophical Society and of the American Academy, and Member of Congress, Lemuel Shaw (A.B. 1800), Chief Justice of the Supreme Court of Massachusetts, Leverett Saltonstall (A.B. 1802), Overseer and Member of Congress, James G. King (A.B. 1810), Member of Congress, Nathaniel L. Frothingham (A.B. 1811), Overseer, and Fellow of the American Academy, Peleg Sprague (A.B. 1812), Judge of the United States District Court, Member of Congress, and United States Senator. The Secretary was Benjamin R. Curtis (A.B. 1829), afterwards Justice of the Supreme Court of the United States.

The distinction of this first list of officers has been maintained through the history of the Association, and its presidency has been perhaps the highest mark of approval which the alumni as a body confer. Among

the presidents since Mr. Adams have been: Edward Everett, Robert C. Winthrop (A.B. 1828), Speaker of the United States House of Representatives, Dr. Oliver Wendell Holmes (A.B. 1829), E. Rockwood Hoar (A.B. 1835), Member of Congress, Attorney-General of the United States, Justice of the Supreme Court of Massachusetts, James Russell Lowell (A.B. 1838), James C. Carter (A.B. 1850), so long one of the leaders of the New York Bar, George F. Hoar (A.B. 1846), United Sates Senator from Massachusetts, Phillips Brooks (A.B. 1855), Bishop of Massachusetts, Joseph Hodges Choate (A.B. 1852), Charles Eliot Norton (A.B. 1846), Robert Todd Lincoln (A.B. 1864), William Lawrence (A.B. 1871), Bishop of Massachusetts, and Charles J. Bonaparte (A.B. 1871).

For many years the activities of the Alumni Association were confined chiefly to the management of the luncheon and the meeting on the afternoon of Commencement Day; but of recent years, with the desire of graduates to take a more active share in aiding the University and in extending its influence, it has enlarged its foundations, and now maintains a continuous existence, with an active general secretary. It is now the central organ for communicating information about the University to graduates in general, and for making their efforts in behalf of it more effective.

In 1907 the Association opened an office in Boston, in the same building with the office of the President and Fellows. Here the general secretary and his assistant secretary carry on a constantly enlarging correspondence about the University and its affairs, and do what they can to make it a convenient point of call for graduates. The Association also maintains here an Appointment Office, which puts younger graduates in

correspondence with business men, and helps them to get started. Already this work has become of importance, and the number of men for whom places are found is large.

The Alumni Association also publishes a weekly organ, the *Harvard Alumni Bulletin,* for the communication of news to graduates. It has at present 16 to 20 pages of news and articles of general interest to graduates, with a good many illustrations. It publishes special articles dealing with the activities of the various departments of the University, historical notices of buildings or of ancient customs, news from the Harvard Clubs throughout the country, athletic news, and notes about the doings of the Alumni. Its circulation is at present about 8000.

Another publication, which is independent of the Alumni Association but which in twenty successful years has done credit to the University, is the *Harvard Graduates' Magazine,* founded in 1892. It is published quarterly and contains authoritative records of all departments of the University and of the Alumni, as well as articles of general interest to educators. It has always an account of the activities of both faculties and undergraduates, with careful summaries of athletic events, news from the various classes, and book reviews. The object of the editor has been to make a permanent record of all matters of interest to Harvard men; and the recent publication of a complete index at the end of the 20th year of publication has shown how successful he has been in this effort. The founder and editor of the *Graduates' Magazine* is William R. Thayer (A.B. 1881). The magazine is excellently printed and has an admirably designed cover. Its seal, with the mallet and pen crossed below the three books and the *Veritas* of

Harvard, has had the good fortune to be adopted for the John Harvard window in St. Saviour's Church, Southwark.

The Harvard Clubs throughout the country are active, numerous, and rapidly increasing. In 1912 there were 86 of them, scattered over America and as far afield as Paris, Berlin, and Japan. These clubs have at least an annual meeting and dinner, and some of them meet more frequently. Where it is possible they have as guest some officer of the Alumni Association who brings them news and greetings from the University. Forty of the clubs maintain one or more scholarships at the University for the benefit of students from their own neighborhood. In 1912 there were 50 such scholarships and the total amount of their stipends was $10,750 a year. Other clubs offer cups or prizes for some form of athletics, or perhaps for debating, in the schools in their neighborhood. There is a distinct tendency on the part of such clubs, representing not only Harvard but other universities, to make themselves an active force in the life of their communities and to bring the united influence of college men to bear on raising the standards of public and private life.

Of all the Harvard clubs, the largest and most prosperous has been that of New York City. Until recently this has been the only one which has had its own building, but this distinction is now shared by the Harvard Club of Boston. The New York Club was founded in 1865, and until 1890 its activities consisted chiefly of the dinners and meetings. In 1890 it bought land on 44th Street and built a house. Since then the building has been enlarged three times. It now reaches through to 45th Street, and has a wide frontage on the two streets.

It has, besides comfortable lounging-rooms, reading-rooms, and a library well furnished with books by Harvard men, a considerable number of bedrooms for the use of non-resident members. Its chief distinction is the great Harvard Hall, which occupies three stories on the 45th Street front. It is 100 feet long, 38 feet wide, and about 40 feet high.

The Club has been highly successful. It was founded with the idea of providing a homelike place of meeting for the large numbers of young Harvard men who settle in New York away from their families. The older men believed that a comfortable club-house with low dues would do much to keep such young men from going wrong out of sheer loneliness. The success of the Club was immediate, and the example has been followed by the graduates of Yale and Princeton; and there are also clubs in which the graduates of several colleges have united, and two or three clubs for the graduates of Greek-Letter societies, which bring together men from many colleges.

Out of the Harvard clubs in the West has grown an association known as the Associated Harvard Clubs, which since 1898 has held annual meetings in different cities. Though it is in spirit and membership a Western association, it includes Harvard clubs from the East as well, and every few years a meeting is held in the East. At these meetings there is serious discussion of the interests of the University and of the ways in which the constituent clubs can advance those interests. Then, after the business meeting, there is an afternoon or a day given to some excursion and a dinner in the evening, all of which help the men to more general acquaintance with each other. This association is one of the strong forces for keeping Harvard a national institution, and

for impressing on the country at large that the whole nation has a proprietary interest in its oldest university.

Besides the Alumni Association of Harvard College there are also thriving associations of graduates of the Law School, of the Medical School, of the Divinity School, and of Harvard Engineers. Of these the Law School Association now issues a quinquennial catalogue of the graduates of the School, with lists of addresses; and every three years it has a meeting at which orations are made and reports are presented on the work of the School. The Medical School Association also meets every three years, for two or three days, to hear papers on subjects connected with the profession; and the meeting closes with a dinner at which addresses are made by officers of the School and distinguished visitors. The Association of Harvard Engineers, which was organized in 1907, had in 1912 a membership of 436. It holds annual meetings at which addresses are made in the interests of the Association. Besides this general society there is a Harvard Engineering Society of New York, which has regular meetings, through the winter months, partly to hear professional papers, partly social. One of its activities is the keeping track of the younger graduates in the profession and helping them to make their way.

The class organizations are an old tradition at Harvard. The class secretary is charged with the duty of keeping the addresses of his classmates and enabling them to communicate with each other. The class committees administer the class funds, which were subscribed after graduation and are used to defray the expenses of the triennial or quinquennial class gatherings. The secretary also issues a report containing statistics and information about the doings of the mem-

bers of the class after graduation. These reports are usually issued the third, sixth, and tenth years after graduation, and then every fifth year. The report of the twenty-fifth year is usually more comprehensive; of recent years it has been the custom to print in that report pictures of each member of the class at graduation, and twenty-five years afterwards, thus furnishing a most interesting mine of material for the study of physiognomy.

Of recent years the reunions of classes three, six, ten, fifteen, and twenty-five years after graduation have drawn together largely increased numbers of men. Under the present arrangement of Commencement Week those classes which have reunions generally gather on Monday and more or less keep together until the boat race on Friday. The preparations are now heralded by burlesque publications and by emissaries of the treasurer of the class committee, which needs considerable money to spend on the celebrations. The classes gather for the Yale baseball game in Cambridge and for the march to the Stadium on Class Day, with banners and with bands. Between times, they have excursions in the harbor or at various country clubs or other places where there is a chance for games and out-door hilarity. The result of these reunions is that very soon any remnants of lines in the class formed during the college course will break down and men come to be on terms of the best of good-fellowship with classmates whom they did not know by sight in college. All these reunions are a force for solidarity and for breaking down the old reserve which was once thought the chief characteristic of Harvard men.

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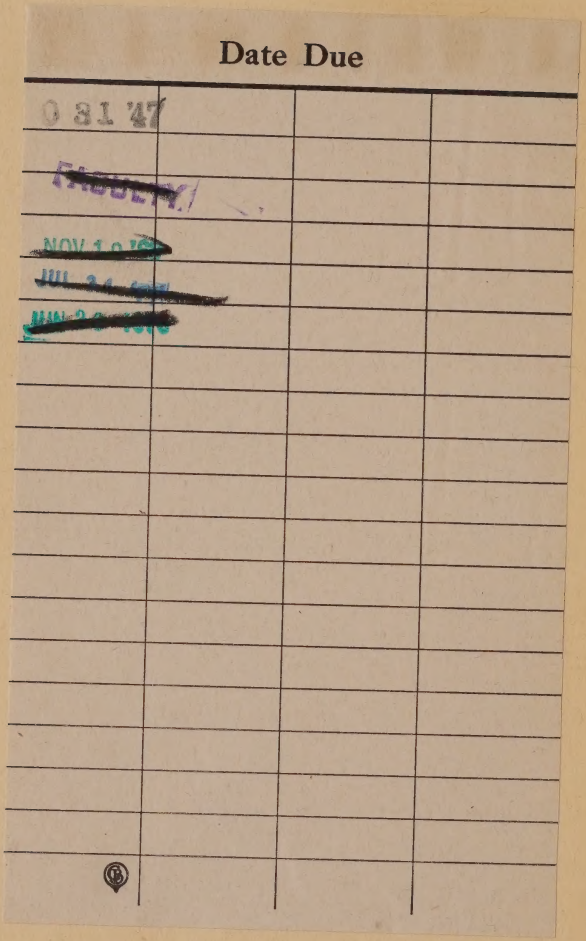
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